

Pipelines & Power-Lines: Building the Energy Transport Future

JAMES W. COLEMAN*

The United States is in the middle of three profound energy revolutions—with booming production of renewable power, natural gas, and oil. The country is replacing coal power with renewable and natural gas power, reducing pollution while saving consumers money. And it has dramatically cut its oil imports while becoming, for the first time in half a century, an important oil exporter. The United States is on the cusp of an energy transformation that will provide immense economic and environmental benefits.

This new energy economy will require massive investment in energy transport—especially power lines to bring wind and solar power to market and gas pipelines to back up these renewable sources. But increased interest from overlapping jurisdictions in energy transport approvals has resulted in delays and uncertainty that make private companies wary of long-term capital investments in new energy facilities. The drive for more careful and holistic environmental assessments of new energy facilities has also repeatedly delayed new infrastructure. And land-owners and property rights groups are increasingly asking the courts to curtail the use of eminent domain by pipeline and power-line companies.

This Article develops a unified scholarly and policy approach to these high-profile threats to energy transport investment. Although most often discussed in the context of controversial oil pipelines, these threats are actually a far greater danger to investment in cleaner power sources like wind, gas, and solar. At this pivotal moment, this Article describes how reforming energy infrastructure reviews can lower the cost of investment in a new energy economy while accommodating increased public interest in pipelines and power-lines. It proposes legislation to ensure a comprehensive, thorough, and unified approval process for energy transport projects.

* Assistant Professor, SMU Dedman School of Law. Special thanks to William Boyd, Ann Carlson, Sharon Jacobs, Alexandra Klass, Sanne Knudsen, Sarah Krakoff, Doug Kysar, Jed Purdy, Jim Salzman, David Spence, Shelley Welton, and workshop participants at the University of Colorado-Duke Energy & Climate Workshop, University of Lucerne Energy Law & Economics Workshop, and Cornell Energy Institute.

TABLE OF CONTENTS

I. INTRODUCTION	264
II. THREE ENERGY MARKET REVOLUTIONS: RENEWABLE POWER, NATURAL GAS, AND OIL.....	267
A. <i>The Renewable Revolution</i>	268
B. <i>The Natural Gas Revolution</i>	272
C. <i>The Oil Revolution</i>	276
III. ENERGY POLICY REVOLUTIONS: CHANGING PROCEDURES FOR APPROVING ENERGY TRANSPORT PROJECTS	279
A. <i>Federal Government's Expanded Role in Interstate Oil and Power Transmission</i>	280
B. <i>State Government's Expanded Role in Interstate Natural Gas Pipelines</i>	284
C. <i>The Push for Expanded Environmental Reviews for Energy Transport Projects</i>	285
D. <i>Objections to Eminent Domain for Energy Transport</i>	288
E. <i>Cross-Cutting Energy Transport Law & Markets Require Simultaneous Focus on Both Pipelines and Power-Lines</i>	289
IV. HOW POLICY UNCERTAINTY IMPACTS INVESTMENT IN ENERGY TRANSPORT	293
V. PRINCIPLES TO ENABLE THE ENERGY FUTURE	295
A. <i>Wide Consultation, One Decision-Maker</i>	295
B. <i>Changes to Approval Process Should Be Prospective Only</i>	298
C. <i>Deadlines for Environmental Reviews</i>	300
D. <i>Speeding Judicial Review Under the National Environmental Policy Act</i>	304
E. <i>Wider Study of Cross-Cutting Issues</i>	306
VI. CONCLUSION.....	307

I. INTRODUCTION

The United States is in the middle of three profound energy revolutions. First, the falling cost of wind and solar power have made these sources the cheapest options in many parts of the country. Second, directional drilling and hydraulic fracturing—or “fracking”—has unlocked new reserves of low-cost, clean-burning natural gas from shale formations, and this gas is now powering new gas power plants that can easily back-up intermittent sources like wind and solar power. Third, fracking has also dramatically increased production of oil,

making the United States the world's biggest petroleum producer and, for the first time in decades, an important oil exporter.

Each of these three revolutions is creating a pressing need for long-distance energy transport, and every new project costs billions of dollars. Wind power is cheapest in the prairie states and needs long-distance power lines to carry it to the urban centers that need power in the Southeast and West Coast. Natural gas is expensive to transport because it is a gas: it must either be sent by air-tight steel pipelines buried in the ground or be sent to massive facilities that can cool it until it becomes a liquid and loaded onto specialized tankers for shipment by sea. Oil is the easiest to transport of these three commodities because it is a liquid, so it can be moved by pipeline, barge, or rail—but even an interstate oil pipeline costs billions of dollars.

Energy transport policy is undergoing similar upheavals. Increased public interest in climate, infrastructure, and energy issues has put increasing pressure on the established system for approving energy transport projects. The federal government has, at times, pushed for a larger role in considering proposals for oil pipelines and power transmission, which traditionally have been assessed by the states. Some states have pushed for a role in regulating interstate natural gas pipelines, which are traditionally under federal regulation. Native American groups have pushed for a larger role in approving infrastructure that could impact their historical homelands—which go beyond reservation lands to cover nearly all of the United States. Land owners have asked state and federal courts to limit the use of eminent domain for pipelines and power lines. And climate activists increasingly demand that governments and courts impose expanded environmental reviews and new substantive standards on energy transport projects to ensure they do not endanger the globe.

These simultaneous energy market and energy policy revolutions are on a collision course: just as U.S. energy markets are demanding massive new investments in power and fuel transport, changing U.S. energy policy is making investors wary. Multi-billion-dollar investments in power lines, pipelines, and liquefied natural gas facilities will only pay off over decades. Even the work necessary to submit an application for energy transport—entering transport contracts, securing easements, applying for government approvals, and purchasing equipment and materials—often costs billions of dollars.¹ The larger

¹ See Notice of Intent to Submit a Claim to Arbitration Under Chapter 11 of the North American Free Trade Agreement, *TransCanada Corp. v. United States*, at 1–2, 27 (2016) (requesting more than \$15 billion in damages and noting that the company had already spent billions of dollars because “before construction can begin, it is necessary, for example, to secure thousands of land easements, purchase equipment and hundreds of miles of pipe, and enter into long-term contracts with shippers to transport their oil” and that transport companies cannot “wait for the issuance of a permit to begin this long lead time work because, under State Department rules, if construction of a pipeline does not begin within five years after a permit is issued, the permit expires”); Licia Corbella, *Editorial: Death of Petronas LNG Project a Wake-up Call for Canada*, CALGARY HERALD (July 27, 2017), <http://calgaryherald.com/business/energy/editorial-death-of-petronas-lng-project-a-wake-up-call-for-canada> [<https://perma.cc/5DWM-PLKV>] (noting that cancelled liquefied natural

the risk that a project will not be approved, or that policies will artificially lower its profits in coming years, the more money investors must be paid to compensate for this uncertainty. Consumers ultimately pay these higher costs. They pay a larger risk premium to investors willing to build energy transport. Or, if investors shy away from these investments, consumers forgo the benefits of cheaper oil, gas, and renewable power that they would otherwise receive.

This Article seeks to avoid a collision of these energy market and energy policy upheavals, advocating principles that can accommodate increased interest in energy policy while, at the same time, providing increased certainty to energy transport investors. Uniquely, it addresses energy transport as a whole—it shows how power-lines, pipelines, and other energy transport methods are similarly impacted by cross-cutting questions of federalism, eminent domain, and environmental assessment. In braiding together strands in the existing energy law literature, it demonstrates the necessity of a broader perspective. For example, climate campaigners often take a “kitchen sink” approach to pipeline litigation: arguing for any procedural or substantive rule that can stop new fossil fuel infrastructure. This Article’s comprehensive approach shows how new procedures developed in these pipeline battles will also slow the new power transmission that is necessary to transition the United States to a low carbon economy. By revealing the internal architecture of energy transport law, this article serves as a blueprint for all parties interested in changing the U.S. energy system, demonstrating which supporting policies may be safely removed, and which cannot be altered without damage to the rest of the system.

Part II explains how booming production of U.S. renewable power, natural gas, and oil is creating a pressing need for more power lines and pipelines. Part III documents how procedures for approving energy transport infrastructure are changing as a result of pressure from the federal government, states, groups, and land owners. It shows how these procedures are common to pipelines, power lines, and other methods of energy transport—showing how pressures on one type of transport inevitably affect other modes of transport. It concludes by showing why climate campaigners would be better served by pursuing substantive regulations that would surgically target fossil fuels rather than imposing new energy transport procedures that will have collateral impacts on renewable power transmission. In doing so, it explores the complex distinctions between substantive, cross-cutting, and procedural energy transport laws, showing which laws should be targeted by those who want to transform the U.S. energy system.

gas (LNG) project spent \$400 million moving through “federal and provincial regulatory processes” and billions securing natural gas reserves). *See generally* James W. Coleman, *Energy Market and Policy Revolutions: Regulatory Process and the Cost of Capital*, in 5 *ENERGY L. & ECON.* 159 (Klaus Mathis & Bruce R. Huber eds., 2018) (discussing the various difficulties with obtaining approval for energy transport infrastructure and their associated costs).

Part IV explains how these changing procedures are increasing uncertainty for energy transport investors, raising prices for energy consumers, and endangering U.S. efforts to create a new energy economy. This Part also explains how this uncertainty is particularly deadly to efforts to lower U.S. greenhouse gas emissions because high-carbon sources like oil may be able to get by using makeshift transport methods such as rail, road, and water transport, whereas renewable power absolutely must have long-term transport infrastructure. A central irony of energy systems is that our dirtiest sources, coal and oil, are easiest to transport, and our cleanest sources, gas and renewables, are most dependent on expensive long-term infrastructure. Thus, a myopic focus on oil pipelines can be dangerous: the oil industry will be fine whether or not new energy transport is built but the renewable industry is almost entirely dependent on this infrastructure.

With the growing problem defined, Part V advocates four principles that can help accommodate increased interest in energy transport while, at the same time, increasing certainty for energy investors. It labels the first principle “wide participation, one decision-maker,” recommending that states go further to ensure that federal interests are represented in state approval procedures and vice versa, but counseling against a dual-approval process that would increase uncertainty by allowing re-litigation of issues already decided in one forum. The second principle is that energy transport approval processes should not change mid-stream after an application is made. The third principle is that applications for energy transport facilities should be subject to timelines that could motivate reasonably prompt actions from decision-makers. The fourth principle is that the federal government should use its expertise to perform more general policy studies of U.S. energy markets, producing studies on the environmental impacts of different fuels and the compatibility of increased infrastructure with energy and climate goals; these studies could inform individual permit decisions from state and federal decision-makers. Part VI concludes the Article.

II. THREE ENERGY MARKET REVOLUTIONS: RENEWABLE POWER, NATURAL GAS, AND OIL

The United States has always been an energy superpower: through the first half of the twentieth century it was responsible for over half of the world’s oil production, powering the Allies through the two World Wars.² Although the United States became a net energy importer in 1953,³ it remained among the

²Rob Bracken et al., *The Oil Age: World Oil Production 1859-2050*, PLACES & SPACES (2006), http://scimaps.org/mapdetail/the_oil_age_world_oi_73 [<https://perma.cc/X5PF-PGP8>]. See generally DANIEL YERGIN, *THE PRIZE: THE EPIC QUEST FOR OIL, MONEY, AND POWER* (1991) (explaining the origins of the oil and gas boom in early 20th century Texas and the development of the United States as the world’s first energy superpower).

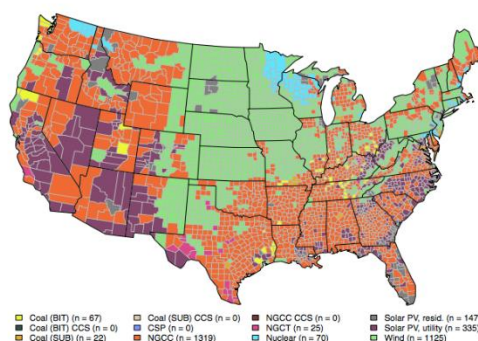
³U.S. ENERGY INFO. ADMIN., *ANNUAL ENERGY OUTLOOK 2017* 18 (2017), [https://www.eia.gov/outlooks/aeo/pdf/0383\(2017\).pdf](https://www.eia.gov/outlooks/aeo/pdf/0383(2017).pdf) [<https://perma.cc/BF5C-QB2T>]

world's top three oil producers along with the U.S.S.R. and Saudi Arabia.⁴ But in recent years, U.S. innovation has moved it to the forefront of energy production across multiple categories: it is now the world's largest producer of wind power,⁵ petroleum (oil and other liquids),⁶ and natural gas.⁷ Cheaper renewable power and shale oil and gas have transformed U.S. energy markets and are creating a pressing need for new energy transport.

A. The Renewable Revolution

In the last ten years, the U.S. power sector has been transformed by the falling cost of renewable power sources like solar and wind. Wind and solar power, supported by state policies and federal tax credits, now produce electricity at costs that are competitive with conventional sources of power

Scenario 4: Minimum cost technology for each county, including availability zones, but not including externalities (Equation 1) with reference case assumptions from Table 1.



[hereinafter EIA OUTLOOK 2017] (“The United States has been a net energy importer since 1953, but declining energy imports and growing energy exports make the United States a net energy exporter by 2026 in the Reference case projection.”).

⁴U.S. ENERGY INFO. ADMIN., ANNUAL ENERGY REVIEW 2007 xxxiv (2007), <https://www.eia.gov/totalenergy/data/annual/archive/038407.pdf> [<https://perma.cc/3YL8-XZKU>] (“From 1974 through 1991, the former U.S.S.R. was the world’s leading crude oil producer. After 1991, Saudi Arabia was the top producer until 2006 when Russia’s production exceeded Saudi Arabia’s for the first time. U.S. production peaked in 1970 but still ranked third in 2007.”).

⁵Press Release, Am. Wind Energy Ass’n, U.S. Number One in the World in Wind Energy Production (Feb. 29, 2016), <http://www.awea.org/MediaCenter/pressrelease.aspx?ItemNumber=8463> [<https://perma.cc/T7SW-DCGR>] (“Wind produced over 190 million megawatt-hours (MWh) in the U.S. last year . . . China is close behind the U.S. at 185.1 million MWh and followed by third-place Germany at 84.6 MWh. Although China has nearly double the installed wind power capacity as the U.S., strong wind resources and production-based U.S. policy have helped build some of the most productive wind farms in the world.”).

⁶Linda Doman, *United States Remains the World’s Top Producer of Petroleum and Natural Gas Hydrocarbons*, U.S. ENERGY INFO. ADMIN.: TODAY IN ENERGY (June 7, 2017), <https://www.eia.gov/todayinenergy/detail.php?id=31532> [<https://perma.cc/8J4E-JSXXG>] (noting that although Russia and Saudi Arabia sometimes surpass U.S. crude oil production, the U.S. has a clear lead in “petroleum” production, which accounts for production of lease condensate as well as crude oil).

⁷*Id.*

generation.⁸ Even without any subsidies, wind power is now on average the cheapest source of new power across a windy triangle of the United States extending from North Dakota to Illinois to the Texas panhandle.⁹ In the meantime, there are large desert areas in California, Arizona, and Nevada where solar is the cheapest power source.¹⁰ As a result, most investment in new capacity for power production has been in renewable sources like wind and solar power.¹¹

This good news raises a question: if a zero-emission source of electricity, with no fuel costs, is the cheapest source of power in wide swaths of the country, why not simply transition to an all renewable economy? There are two fundamental difficulties. First, the regions where renewable power and solar power are the cheapest options tend to be the least populated portions of the United States: wind is strongest on the lone prairie and sun is strongest in areas that are literally desert.¹² If solar and wind are going to power the U.S. grid, it will take a massive build-out of power transmission to bring that power to the urban centers where power is actually consumed.¹³ And that is exactly what

⁸EIA OUTLOOK 2017, *supra* note 3, at 86; U.S. ENERGY INFO. ADMIN., LEVELIZED COST AND LEVELIZED AVOIDED COST OF NEW GENERATION RESOURCES IN THE ANNUAL ENERGY OUTLOOK 2017 1 (2017), https://www.eia.gov/outlooks/aeo/pdf/electricity_generation.pdf [<https://perma.cc/JEQ9-8CG7>] [hereinafter EIA LEVELIZED 2017] (“For technologies such as solar and wind generation that have no fuel costs and relatively small variable O&M costs, LCOE changes in rough proportion to the estimated capital cost of generation capacity.”). There are, however, important caveats. *Id.* at 3 (noting, for example, that it “includes the impacts of the Clean Power Plan (CPP), state-level renewable electricity requirements as of November 2016, and an extension and phase-out of federal tax credits for renewable generation”).

⁹Joshua D. Rhodes et al., *New U.S. Power Costs: By County, with Environmental Externalities*, in THE FULL COST OF ELECTRICITY, U. TEX. ENERGY INST. 11, 17 fig.8 (2016), https://energy.utexas.edu/sites/default/files/UTAustin_FCe_LCOE_2016.pdf [<https://perma.cc/C3XE-PKZ8>] (using figures, including the map shown above, to depict the minimum cost technology for each county across the United States).

¹⁰*Id.* at 17.

¹¹EIA OUTLOOK 2017, *supra* note 3, at 85.

¹²*See* Rhodes et al., *supra* note 9, at 11, 17. *See generally* Ashley C. Brown & Jim Rossi, *Siting Transmission Lines in a Changed Milieu: Evolving Notions of the ‘Public Interest’ in Balancing State and Regional Considerations*, 81 U. COLO. L. REV. 706 (2010) (discussing the difficulties associated with using renewable sources of energy in populous areas).

¹³This may lead to a further energy transport revolution in which direct current (DC) transmission lines are used rather than traditional alternating current (AC) lines because DC transmission is more efficient for long-distance one-way electricity transport. Alexandra B. Klass, *Takings and Transmission*, 91 N.C. L. REV. 1079, 1111 & n.196 (2013) (“Today, new, high-voltage DC (“HVDC”) lines are often proposed as the most efficient and economical method of transporting wind power long distances.”).

utilities are planning: they believe they will smash investment records by investing over \$22 billion dollars in power transport in 2017.¹⁴

Second, the power grid must constantly balance the power provided to the grid with the power demanded by consumers—every light switched on, every phone plugged in, every cycle of the dishwasher.¹⁵ If either too much or too little power is supplied to the grid, electrical devices will fail in homes and workplaces everywhere.¹⁶ Grid managers are accustomed to avoiding such problems by ordering more or less power from power plants across the grid to manage fluctuations in demand.¹⁷ This challenge becomes more difficult when using power supplies that also fluctuate uncontrollably, and the wind and sun only provide power when the wind is blowing or the sun is shining.

There are several ways to integrate more cheap and clean renewable power into the grid. The most plausible options will require more capital investment in energy transmission and each of these options will have to be pursued simultaneously if the United States wants a timely transition toward renewable sources. First, long-range inter-regional transmission can help smooth local fluctuations in renewable power—when it is cloudy and still in one region, it may be sunny and windy in another region that could be connected by transmission.¹⁸ Second, renewable sources can be paired with natural gas power plants that can easily ramp up and down to ensure that power supply matches demand, but that will require a huge build-out in natural gas pipelines.¹⁹

Third, renewable sources can be paired with facilities that can store power. At the moment, 98% of these facilities use what is known as “pumped hydro,” where excess electricity can be used to pump water from a lower reservoir to a higher reservoir and then can be released back to the lower reservoir to create

¹⁴EDISON ELECTRIC INST., TRANSMISSION PROJECTS: AT A GLANCE v (2016), http://www.eei.org/issuesandpolicy/transmission/Documents/Trans_Project_lowres_bookmarked.pdf [https://perma.cc/3XLN-UL7J].

¹⁵See EIA LEVELIZED 2017, *supra* note 8, at 2 (“Since load must be balanced on a continuous basis, units whose output can be varied to follow demand (dispatchable technologies) generally have more value to a system than less flexible units (non-dispatchable technologies), or those whose operation is tied to the availability of an intermittent resource.”).

¹⁶See *id.*

¹⁷Shelley Welton, *Grasping for Energy Democracy*, 116 MICH. L. REV. 581, 595–96 (2018); Shelley Welton, *Public Energy*, 92 N.Y.U. L. REV. 267, 293 & n.115 (2017).

¹⁸Hari M. Osofsky & Hannah J. Wiseman, *Hybrid Energy Governance*, 2014 U. ILL. L. REV. 1, 44–52 (2014); Herman K. Trabish, *Why Aren't Those Wind Turbines Turning?*, GREENTECH MEDIA (Mar. 24, 2011), <https://www.greentechmedia.com/articles/read/why-arent-those-wind-turbines-turning#gs.GIGzFNk> [https://perma.cc/5XX5-7YJS] (describing why wind generators must sometimes be “curtailed”—producing no energy even when wind is strongest—because of the lack of power transmission).

¹⁹See *infra* Part II.B; James W. Coleman & Sarah Marie Jordaan, *Clearing the Air: How Canadian LNG Exports Could Help Meet World Greenhouse Gas Reduction Goals*, C.D. HOWE INST., E-BRIEF 2 (2016), https://www.cdhowe.org/sites/default/files/attachments/research_papers/mixed/e-brief_244.pdf [https://perma.cc/QD94-4PGJ].

electricity when it is needed.²⁰ But these pumped hydro facilities are also limited to certain locations: they are most economical where there is suitable terrain, limited evaporation and wildlife, and ideally, pre-existing hydropower or, at least, reservoirs.²¹ As a result, these facilities are, if anything, more geographically constrained than solar and wind power.²² And transitioning to a low carbon economy will require massive investments in new storage facilities and transmission from storage locations to the urban grids that demand power.²³ To support a move to pure renewable power, studies suggest that the United States would need over 2,500 Gigawatts of power storage, more than twice the country's current generation capacity.²⁴ Currently the United States has 22 Gigawatts of power storage capacity—less than 1% of what is needed.²⁵ No one has yet estimated the massive scale of transmission required to connect that much pumped hydro, dispersed across the country, to power grids that need electricity storage.

The power industry already attracts more capital investment than any other U.S. industry.²⁶ Just to maintain the current level of service, it will need another

²⁰ John Roach, *For Storing Electricity, Utilities Are Turning to Pumped Hydro*, YALE ENV'T 360 (Nov. 24, 2015), http://e360.yale.edu/features/for_storing_electricity_utilities_are_turning_to_pumped_hydro [<https://perma.cc/822F-HYZR>] (“[P]umped storage hydropower is still the only one [method of power storage] that is mature, reliable, proven, and commercially available . . .”). The next biggest sources of power storage are compressed air energy storage, where air is pumped underground and then released when power is needed, and thermal storage, where excess electricity is used to produce heat or cold that can be stored in insulation and used when necessary. IMRE GYUK ET AL., U.S. DEP'T OF ENERGY, GRID ENERGY STORAGE 11 (2013), <https://energy.gov/sites/prod/files/2014/09/f18/Grid%20Energy%20Storage%20December%202013.pdf> [<https://perma.cc/Q4JA-TB35>]. Battery storage is a distant fourth. *Id.*

²¹ *Pumped Storage Provides Grid Reliability Even with Net Generation Loss*, U.S. ENERGY INFO. ADMIN.: TODAY IN ENERGY (July 8, 2013), <https://www.eia.gov/todayinenergy/detail.php?id=11991> [<https://perma.cc/A3QW-BCF9>] [hereinafter EIA, *Pumped Storage*] (showing location of pumped hydro plants in the United States).

²² *See id.*

²³ Other options for moving to a low carbon economy, such as nuclear power or carbon capture, would also require massive capital investments. Edward S. Rubin et al., *Cost and Performance of Fossil Fuel Power Plants with CO₂ Capture and Storage*, 35 ENERGY POL. 4444, 4444 (2007); Georg Woite, *Capital Investment Costs of Nuclear Power Plants*, 20 INT'L ATOMIC ENERGY AGENCY BULLETIN 11, 12–13 (1978), <https://www.iaea.org/sites/default/files/publications/magazines/bulletin/bull20-1/20104781123.pdf> [<https://perma.cc/4C5G-XDBQ>].

²⁴ Christopher T. M. Clack et al., *Evaluation of a Proposal for Reliable Low-Cost Grid Power with 100% Wind, Water, and Solar*, 114 PROCEEDINGS NAT'L ACAD. SCI. 6722, 6724 (2017), <http://www.pnas.org/content/114/26/6722.full.pdf> [<https://perma.cc/4ATZ-6YGS>] (noting that a study suggesting that the United States could rely on 100% renewable power “assumes a total of 2,604 GW of storage charging capacity, more than double the entire current capacity of all power plants in the United States”).

²⁵ EIA, *Pumped Storage*, *supra* note 21.

²⁶ DANIEL YERGIN, THE QUEST: ENERGY, SECURITY, AND THE REMAKING OF THE MODERN WORLD 401 (2012) (“Electric power is a classically long-term business. A power

trillion dollars of investment.²⁷ Transitioning to a low-carbon economy will require even more investment to transmit power from dispersed renewable resources, integrate power storage, and provide natural gas transport and storage to back-up these variable sources of power.

B. *The Natural Gas Revolution*

In the past decade, directional drilling and hydraulic fracturing have transformed global natural gas markets. Fracking has unlocked increased production in formations like the Marcellus Shale, which is centered in Pennsylvania, and the Barnett Shale in Texas.²⁸ And wells in formations that are generally known for oil production, such as the Bakken Shale in North Dakota and the Eagle Ford in Texas, are also producing more gas along with the oil extracted, inevitably increasing U.S. gas production.²⁹

Increased production of natural gas has crashed natural gas prices across much of North America: prices for producers fell more than 80% from July 2008 to May 2012.³⁰ Natural gas prices are especially subject to price swings because it is so expensive to transport a gas.³¹ Solids like coal can be transported in almost any container—even an open railroad car. Liquids like oil can also be transported in many vessels, including trucks, rails, barges, and tankers. But gas

plant built today may be operating 60 to 70 years from now. It is also a big-ticket business—in fact, it is the most capital-intensive major industry in the United States. Fully 10 percent of all capital investment in the United States is embedded in the power plants, transmission lines, substations, poles, and wires that altogether make up the power infrastructure.”).

²⁷ Alexandra B. Klass & Jim Rossi, *Revitalizing Dormant Commerce Clause Review for Interstate Coordination*, 100 MINN. L. REV. 129, 140–41 (2015) (“The U.S. electric grid constitutes an \$876 billion asset managed by over 3,000 utilities serving nearly 300 million customers.”). *Id.* at 142 (“[I]n order to maintain even current levels of grid reliability, the electric industry must make . . . investments in transmission and distribution alone of nearly \$900 billion.”).

²⁸ See James W. Coleman, *Importing Energy, Exporting Regulation*, 83 FORDHAM L. REV. 1357, 1364–65 (2014) [hereinafter Coleman, *Importing*]; Thomas W. Merrill & David M. Schizer, *The Shale Oil and Gas Revolution, Hydraulic Fracturing, and Water Contamination: A Regulatory Strategy*, 98 MINN. L. REV. 145, 153–54 (2013); Fenner L. Stewart, *When the Shale Gale Hit Ohio: The Failures of the Dormant Mineral Act, Its Heroic Interpretations, and Grave Choices Facing the Supreme Court*, 43 CAP. U. L. REV. 435, 436–38 (2015).

²⁹ See Coleman, *Importing*, *supra* note 28, at 1366–67.

³⁰ See *id.* at 1364; *U.S. Natural Gas Wellhead Price*, U.S. ENERGY INFO. ADMIN. (Dec. 12, 2018), <http://www.eia.gov/dnav/ng/hist/n9190us3m.htm> [<https://perma.cc/F3PX-CBML>].

³¹ See James W. Coleman, *The Shale ‘Revolution’ Is About Gas Prices & Oil Production*, ENERGY CENT. (July 17, 2014), <http://theenergycollective.com/energylawprof/432466/shale-revolution-about-gas-prices-oil-production> [<https://perma.cc/VAR3-EUTA>] [hereinafter Coleman, *Shale*] (“Increased production of natural gas has had a dramatic effect on natural gas prices because natural gas is hard to transport. If you can’t send natural gas by an existing pipeline to an existing market, your next best option may be to cool it into a liquid at –162 °C, load the liquid onto a giant, insulated, quarter-billion dollar vessel and ship it across the ocean, where it can be regasified and burned.”).

can only be transported with expensive air-tight, and sometimes refrigerated vessels.³² So if coal or oil is more expensive in one region than another, companies can simply ship these fuels to the place where it is worth more until prices equalize.³³ On the other hand, when there is a local increase in gas production, it must all be used locally even if there is little need to burn more gas in the immediate area until transport can be built to carry it to markets where gas is desperately needed.³⁴ This is why natural gas prices around the world can vary by orders of magnitude, whereas the price of oil, which is cheaper to transport, differs only by percentage points across the globe.³⁵

As a result, fracking and new gas production have opened up wide natural gas price differentials around the world. Even markets in close proximity can have very different gas prices if there is not enough transport capacity to serve the demand in the high cost market: for example, while Pennsylvania and Texas have the cheapest natural gas in the world, nearby markets in Massachusetts and Mexico at times pay the world's highest prices for natural gas.³⁶

³² Mark P. Gergen, *The Use of Open Terms in Contract*, 92 COLUM. L. REV. 997, 1018 n.68 (1992) (discussing economic peril for gas producers "where gas found cannot be sold currently because a pipeline is unavailable and the gas cannot otherwise be marketed"); Jacqueline Lang Weaver, *Implied Covenants in Oil and Gas Law Under Federal Energy Price Regulation*, 34 VAND. L. REV. 1473, 1518 n.169 (1981) ("Gas is not easily stored above ground and can be transported only by pipeline. Moreover, gas pipelines require large capital investments and can be justified only if the pipeline owner has secure sources of supply under long-term gas purchase contracts."); Nancy J. Forbis, Note, *The Shut-In Royalty Clause: Balancing the Interests of Lessors and Lessees*, 67 TEX. L. REV. 1129, 1131 (1989) ("Natural gas is difficult, if not impossible, to store outside a reservoir, and thus producers must either transport gas to a pipeline as it is produced or retain it at the wellhead until they can locate a willing purchaser.").

³³ See, e.g., Coleman, *Shale*, *supra* note 31.

³⁴ *Id.*

³⁵ *Id.* Renewable energy, of course, faces the same dilemma. Someone is always willing to pay for electricity somewhere, but it is often too expensive to transport electricity from wind-abundant regions to places where it is needed. So wind and solar farms often receive very little for their electricity or even have to pay other parties to take it. Avery Thompson, *It's So Windy in Britain That the Price of Electricity Went Negative*, POPULAR MECHS. (June 8, 2017), <https://www.popularmechanics.com/science/energy/a26827/britain-price-of-electricity-negative/> [<https://perma.cc/CV7T-JNZZ>]; Cassie Werber, *California Is Getting So Much Power from Solar That Wholesale Electricity Prices Are Turning Negative*, QUARTZ (Apr. 8, 2017), <https://qz.com/953614/california-produced-so-much-power-from-solar-energy-this-spring-that-wholesale-electricity-prices-turned-negative/> [<https://perma.cc/6RY3-NDZJ>]. There are signs that the same dynamic will gradually impact more and more regions as they add renewable power to the grid. *A Regional First: New Englanders Used Less Grid Electricity Midday Than While They Were Sleeping on April 21*, ISO NEW ENGLAND: ISO NEWswire (May 3, 2018), <http://isonewswire.com/updates/2018/5/3/a-regional-first-new-englanders-used-less-grid-electricity-m.html> [<https://perma.cc/H9SE-GY5S>].

³⁶ EIA Staff, *December Natural Gas Prices Spike in Boston*, U.S. ENERGY INFO. ADMIN. (Dec. 6, 2013), <http://www.eia.gov/todayinenergy/detail.cfm?id=14071> [<https://perma.cc/Y9T4-VGBZ>]; Adebola S. Kasumu et al., *Country-Level Life Cycle*

These price differentials have set off a global race to connect new production with high gas price markets in Asia and on the U.S. East Coast.³⁷ The two main methods of moving natural gas—pipeline and ships carrying liquefied natural gas—both require billions of dollars of capital investment.³⁸

Assessment of Greenhouse Gas Emissions from Liquefied Natural Gas Trade for Electricity Generation, 52 ENVTL. SCI. & TECH. 1735, 1739 (2018) (showing a spike in natural gas prices in Mexico in mid-2013 from under \$5 per million British Thermal Units (MMBTU) to over \$15 per MMBTU while U.S. Gulf Coast prices remain low); Naureen S. Malik, *Cold Snap Makes New England the World's Priciest Gas Market*, BLOOMBERG NEWS ENTER. (Dec. 27, 2017), <https://www.bloomberg.com/news/articles/2017-12-26/cold-snap-makes-new-england-the-world-s-priciest-market-for-gas> [on file with the *Ohio State Law Journal*].

³⁷ Coleman, *Importing*, *supra* note 28, at 1365–66; Merrill & Schizer, *supra* note 28, at 153–54. During the decade of peaking natural gas prices, the United States added over 20,000 miles of natural gas pipelines to connect expanding sources of natural gas production with natural gas demand. James Tobin, *Major Changes in Natural Gas Transportation Capacity, 1998-2008*, U.S. ENERGY INFO. ADMIN. (Nov. 2008), http://www.eia.gov/oil_gas/fwd/ngpipelinetc.html [<https://perma.cc/4D3N-WHYG>] (“More than 20,000 miles of new natural gas transmission pipeline, representing more than 97 billion cubic feet per day of capacity, were placed in service in the United States over the past 10 years.”). That building boom has continued in the new era of natural gas abundance and is only likely to increase. And there is every likelihood that the pace of pipeline building will continue as the nation moves from coal to natural gas for electricity and heating oil to natural gas for heating. *Natural Gas Year-in-Review*, U.S. ENERGY INFO. ADMIN. (July 10, 2012), https://www.eia.gov/naturalgas/review/archive/2011/print_version.php [<https://perma.cc/7ZU6-HG9S>]. In the decade of high gas prices, U.S. importers sought to build several new LNG import facilities. Clifford Krauss, *Exports of American Natural Gas May Fall Short of High Hopes*, N.Y. TIMES (Jan. 4, 2013), <https://www.nytimes.com/2013/01/05/business/energy-environment/exports-of-us-gas-may-fall-short-of-high-hopes.html> [on file with *Ohio State Law Journal*]. Now, with shale-gas driving U.S. prices below \$3 per million BTUs, and Asian shale-gas prices over \$15, investors have submitted several applications to the Department of Energy for new LNG export facilities that could ship to Asia. ERNST & YOUNG GLOB. LTD., *GLOBAL LNG: WILL NEW DEMAND AND NEW SUPPLY MEAN NEW PRICING?* 9 (2013) <http://www.lngbunkering.org/sites/default/files/2013%20EY%20impact%20of%20global%20supply%20patterens%20on%20LNG%20price.pdf> [<https://perma.cc/43AE-J255>]. Since 1981, the global LNG trade has doubled every eight years. INT’L GAS UNION, *WORLD LNG REPORT 2011* 7 (2012), https://www.igu.org/sites/default/files/node-document-field_file/LNG%20Report%202011.pdf [<https://perma.cc/GS44-L8MU>]; Knut Einar Rosendahl & Eirik Lund Sagen, *The Global Natural Gas Market: Will Transport Cost Reductions Lead to Lower Prices?*, 30 ENERGY J. 17, 17 (2009) (“Over the last decade the costs of LNG have been significantly reduced, more producers have entered the gas market in general and the LNG market in particular, and the trade between continents has increased.”).

³⁸ Coleman, *Shale*, *supra* note 31 (noting that because of the cost of shipping gas, “when natural gas production rises, prices fall quickly because there is little use for the excess gas in the markets it can reach. Prices will keep falling until 1) gas is so cheap that energy users reliant on alternatives like coal and heating oil switch to gas, 2) gas is so cheap that it can be profitably liquefied and sent overseas, or 3) gas is so cheap that it’s no longer worthwhile to keep expanding production.”). The U.S. government has repeatedly said that until global prices converge, global liquefied natural gas transport will continue to increase. JOHN CONTI,

Interstate natural gas pipelines must be designed to avoid gas leakage, and liquefaction facilities must cool natural gas most of the way to absolute zero until the gas turns into a liquid that can be transported on quarter-billion dollar refrigerated ships.³⁹

Apart from the economic imperative to bring new U.S. gas production to the markets where it is needed, increased natural gas transport has also been a central part of U.S. environmental and geopolitical strategy.⁴⁰ Compared to other fossil fuels like oil and coal, gas burns extremely cleanly, which is why it can even be burned inside a home.⁴¹ So liquefied natural gas exports could help urban areas phase out dirtier fuels like heating oil, and help developing countries address their air pollution problems by closing coal plants.⁴² Natural gas can also complement intermittent sources like solar and wind power because, unlike other power sources, it can ramp up to meet demand when those sources do not provide enough power.⁴³ Finally, better natural gas transport would mitigate one

U.S. ENERGY INFO. ADMIN., EFFECT OF INCREASED NATURAL GAS EXPORTS ON DOMESTIC ENERGY MARKETS 3 (2012), http://www.eia.gov/analysis/requests/fe/pdf/fe_lng.pdf [<https://perma.cc/MGJ6-3TRS>] (“Unlike the oil market, current natural gas markets are not integrated globally. In today’s markets, natural gas prices span a range from \$0.75 per million British thermal units (MMBtu) in Saudi Arabia to \$4 per MMBtu in the United States and \$16 per MMBtu in Asian markets that rely on LNG imports. Prices in European markets, which reflect a mix of spot prices and contract prices with some indexation to oil, fall between U.S [sic] and Asian prices.”).

³⁹ Jacob Dweck et al., *Liquefied Natural Gas (LNG) Litigation After the Energy Policy Act of 2005: State Powers in LNG Terminal Siting*, 27 ENERGY L.J. 473, 473 (2006) (“Transporting natural gas very long distances from gas fields located in regions of the world with little or nonexistent consuming markets across the oceans to large consuming markets is made feasible by chilling the gas to minus 260 degrees Fahrenheit, at which point the natural gas changes to a liquid state, reducing its volume to 1/600th that of vaporous natural gas.”). Absolute zero is almost exactly minus 460°F. Sarah Zielinski, *Absolute Zero: Why Is a Negative Number Called Absolute Zero?*, SMITHSONIAN (Jan. 1, 2008), <http://www.smithsonianmag.com/science-nature/absolute-zero-13930448/> [<https://perma.cc/326E-BFVM>].

⁴⁰ Agnia Grigas, *Shale Shock: How to Use America’s Energy Market as a Foreign Policy Tool*, NAT’L INT. (Mar. 19, 2017), <https://nationalinterest.org/feature/shale-shock-how-use-americas-energy-market-foreign-policy-19823> [<https://perma.cc/V7M2-WD7Q>].

⁴¹ *Environmental Impacts of Natural Gas*, UNION OF CONCERNED SCIENTISTS, <https://www.ucsusa.org/clean-energy/coal-and-other-fossil-fuels/environmental-impacts-of-natural-gas#.WshoHdPwZjs> [<https://perma.cc/6QQV-NADH>] (“Cleaner burning than other fossil fuels, the combustion of natural gas produces negligible amounts of sulfur, mercury, and particulates.”).

⁴² Coleman & Jordaan, *supra* note 19, at 2.

⁴³ *Id.* (“Unlike solar and wind power, natural gas plants can be run at any time on demand. Such plants even work well with solar and wind because they are easy to ramp up or down to match power demand by supplementing the intermittent power these renewable sources provide.”). Fast-ramping gas plants can also increase the value of renewable sources. When solar and wind farms sell their power on a grid dominated by nuclear, hydro, or coal power, they often fetch a low price because those sources will bid into the market at a very low price rather than incur the expense of shutting down intermittently. See Michael

negative side effect of the U.S. oil boom—oil from shale formations often is accompanied by gas, and if there is no market for that gas, it is simply burned off (known as “flaring”), wasting the fuel and emitting greenhouse gases.⁴⁴

C. The Oil Revolution

Directional drilling and hydraulic fracturing have also transformed U.S. oil production. U.S. oil production nearly doubled in seven years from under 5 million barrels per day in 2008, to nearly 10 million barrels per day in 2015.⁴⁵ And, after a short downturn in 2016, the oil boom is back stronger than ever. The United States is now projected to surpass its previous record oil production, set in 1970, and is already producing more than 10 million barrels per day.⁴⁶

The geographical distribution of North American oil production has also shifted dramatically.⁴⁷ Fracking has created three super-fields, each producing over 1 million barrels of crude oil per day. The Permian Basin in western Texas and southeastern New Mexico was the first to reach 1 million barrels in 2012 and has been rising steadily since that time, recently reaching 2.5 million barrels per day.⁴⁸ The Eagle Ford shale in southern Texas was next, hitting 1 million barrels per day in 2013.⁴⁹ The Bakken shale also reached that benchmark in

Shellenberger, *Yes, Solar and Wind Really Do Increase Electricity Prices -- And for Inherently Physical Reasons*, FORBES (Apr. 25, 2018), <https://www.forbes.com/sites/michaelshellenberger/2018/04/25/yes-solar-and-wind-really-do-increase-electricity-prices-and-for-inherently-physical-reasons/#1e5d2fd17e84> [https://perma.cc/JQ8A-5WWQ]. By contrast, a natural gas plant will gladly turn the grid over to renewable sources at somewhat higher prices, because the gas plant can ramp down almost costlessly and will save money on the natural gas it would otherwise need to purchase to serve demand. *Id.*

⁴⁴Alexandra B. Klass & Danielle Meinhardt, *Transporting Oil and Gas: U.S. Infrastructure Challenges*, 100 IOWA L. REV. 947, 1009–15 (2015) (describing extensive flaring in North Dakota as a result of lack of transport options to bring natural gas to markets in need of gas).

⁴⁵U.S. ENERGY INFO. ADMIN., U.S. FIELD PRODUCTION OF CRUDE OIL (2019), <https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=MCRFPUS2&f=A> [https://perma.cc/3YQB-T5T6].

⁴⁶Jack Perrin & Emily Geary, *U.S. Monthly Crude Oil Production Exceeds 10 Million Barrels per Day, Highest Since 1970*, U.S. ENERGY INFO. ADMIN. (Feb. 1, 2018), <https://www.eia.gov/todayinenergy/detail.php?id=34772> [https://perma.cc/MB9Z-JM36].

⁴⁷Fenner L. Stewart & Allan Ingelson, *Regulating Energy Innovation: US Responses to Hydraulic Fracturing, Wastewater Injection and Induced Seismicity*, 35 J. ENERGY & NAT. RESOURCES 109, 117–18 (2016) (identifying shale formation and corresponding twenty-eight states of the Lower 48 where they are located).

⁴⁸U.S. ENERGY INFO. ADMIN., PERMIAN REGION DRILLING PRODUCTIVITY REPORT (2018), <https://www.eia.gov/petroleum/drilling/archive/2018/12/pdf/permian.pdf> [https://perma.cc/X3MG-FU8U].

⁴⁹U.S. ENERGY INFO. ADMIN., EAGLE FORD REGION DRILLING PRODUCTIVITY REPORT (2018), <https://www.eia.gov/petroleum/drilling/pdf/eagleford.pdf> [https://perma.cc/32U9-JBP2]; U.S. ENERGY INFO. ADMIN., PERMIAN REGION DRILLING PRODUCTIVITY REPORT (2017) <https://www.eia.gov/petroleum/drilling/pdf/eagleford.pdf> [https://perma.cc/E7ZN-2UWT].

2013.⁵⁰ As recently as 2010 oil production in North Dakota had been negligible; now it is the second-biggest oil producer.⁵¹

The pace of this development is astonishing. After just a few years of widespread fracking, each of these fields is now producing more oil than is produced in all the fields of oil powers like Libya.⁵² And Texas's traditional reputation as an oil capital may obscure the scale of the revolution that has occurred there: in just four years it went from just over 1 million barrels per day of production to over 3.5 million barrels per day. After more than fifty years of development, oil superpowers like Kuwait and Nigeria produce 2.5 million barrels per day.⁵³ Texas added 2.5 million barrels a day on top of its existing production in less than fifty months.⁵⁴ It now produces more oil than Kuwait and Libya combined.⁵⁵

Canada has also contributed to the explosion of onshore oil production in North America. As recently as 2000, the country produced less than 2 million barrels per day of oil.⁵⁶ But expanding production in Alberta's oil sands, as well

⁵⁰ U.S. ENERGY INFO. ADMIN., BAKKEN REGION DRILLING PRODUCTIVITY REPORT (2018), <https://www.eia.gov/petroleum/drilling/pdf/bakken.pdf> [hereinafter BAKKEN PRODUCTIVITY REPORT]. The Bakken shale also extends into portions of Montana and Saskatchewan. See *Bakken Shale Maps*, BAKKEN SHALE, <https://bakkenshale.com/maps/> [<https://permca.cc/2Z96-BMCA>].

⁵¹ James Coleman (@energylawprof), *Crude Oil Production by State*, TWITTER (Mar. 29, 2018, 8:16 AM), <https://twitter.com/EnergyLawProf/status/979376653573947392> [<https://perma.cc/EXV3-UWR7>] [hereinafter *Crude Oil Production by State*]; see also BAKKEN PRODUCTIVITY REPORT, *supra* note 50 (providing more detailed data).

⁵² Salma El Wardany, *Libya Oil Output at 4-Year High Loosens OPEC Grip on Supply*, BLOOMBERG NEWS ENTER. (July 3, 2017), <https://www.bloomberg.com/news/articles/2017-07-02/libya-s-oil-production-said-to-exceed-1-million-barrels-a-day> [on file with the *Ohio State Law Journal*].

⁵³ U.S. ENERGY INFO. ADMIN., CRUDE OIL PRODUCTION, KUWAIT, ANNUAL, <https://www.eia.gov/opendata/qb.php?category=711308&sdid=TOTAL.PAPRPKU.A> [<https://perma.cc/24ZE-3ZUZ>] [hereinafter CRUDE OIL PRODUCTION, KUWAIT, ANNUAL]; U.S. ENERGY INFO. ADMIN., CRUDE OIL PRODUCTION, NIGERIA, ANNUAL, <https://www.eia.gov/opendata/qb.php?category=711308&sdid=TOTAL.PAPRPNI.A> [<https://perma.cc/NJT7-8DGH>].

⁵⁴ U.S. ENERGY INFO. ADMIN., TEXAS FIELD PRODUCTION OF CRUDE OIL, <https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=p&s=mcrfptx1&f=a> [<https://perma.cc/MBQ7-KLGK>] [hereinafter TEXAS FIELD PRODUCTION OF CRUDE OIL]; see *Crude Oil Production by State*, *supra* note 51 (comparing Texas production with that in other states).

⁵⁵ Compare *Crude Oil Production by State*, *supra* note 51 (Texas produces over 4,000,000 barrels per day), with CRUDE OIL PRODUCTION, KUWAIT, ANNUAL, *supra* note 53 (producing approximately 2,750,000 barrels per day), and U.S. ENERGY INFO. ADMIN., CRUDE OIL PRODUCTION, LIBYA, ANNUAL, https://www.eia.gov/opendata/qb.php?category=1039874&sdid=STEO.COPR_LY.A [<https://perma.cc/M223-XJDC>] (producing approximately 897,000 barrels per day).

⁵⁶ U.S. ENERGY INFO. ADMIN., CRUDE OIL PRODUCTION, CANADA, ANNUAL <https://www.eia.gov/opendata/qb.php?category=711309&sdid=TOTAL.PAPRPCN.A> [<https://perma.cc/TS5M-WDW9>].

as fracking in Alberta and Saskatchewan, have doubled Canadian production, which now stands at 4 million barrels per day, not including offshore production in Eastern Canada.⁵⁷

This onshore oil boom has scrambled oil transport markets, which for decades were designed to carry oil into the center of North America. Historically the best price for crude was obtained at refineries in the U.S. Midwest near Chicago.⁵⁸ And refineries in Texas took in oil from overseas to slake the thirst of fuel markets in the South and Southeast.⁵⁹ Now a flood of oil must travel the other way, from Alberta, North Dakota, and Texas to parts of the country, and parts of the world, that have not been part of the fracking boom.⁶⁰

This new oil geography has led to a boom in pipeline proposals designed to take oil from the center of the continent to the coasts, which is where most U.S. refineries are located.⁶¹ While infamous pipelines like Keystone XL and Dakota Access attracted controversy, numerous other pipelines and pipeline expansions were approved and built, bringing oil south toward the coast.⁶² But these proposals have not been able to keep up with the flood of crude: large volumes

⁵⁷ CANADIAN ASS'N OF PETROLEUM PRODUCERS, CRUDE OIL FORECAST, MARKETS AND TRANSPORTATION 4 (2017), <http://www.oscaalberta.ca/wp-content/uploads/2017/06/CAPP-2017-Crude-Oil-Forecast.pdf> [<https://perma.cc/94LG-3CYK>] [hereinafter CANADIAN CRUDE OIL FORECAST 2017].

⁵⁸ Andrew Leach, *The Shifting Flow of Oil*, CANADIAN BUS. (Sept. 19, 2013), <http://www.canadianbusiness.com/blogs-and-comment/the-shifting-flow-of-oil/> [<https://perma.cc/3F7R-PBRY>] [hereinafter Leach, *Shifting Flow*]; Andrew Leach, *Explaining Canada's Hurry to Build Pipelines in the U.S.*, MACLEANS (Nov. 21, 2011), <http://www.macleans.ca/economy/economicanalysis/explaining-canadas-hurry-to-build-pipelines-in-the-u-s/> [<https://perma.cc/N8E7-AZ2Y>] [hereinafter Leach, *Explaining Canada's Hurry*].

⁵⁹ See Leach, *Shifting Flow*, *supra* note 58; Leach, *Explaining Canada's Hurry*, *supra* note 58.

⁶⁰ See Leach, *Explaining Canada's Hurry*, *supra* note 58.

⁶¹ CANADIAN ASS'N OF PETROLEUM PRODUCERS, CRUDE OIL FORECAST, MARKETS AND TRANSPORTATION iii-iv (2015), http://0104.nccdn.net/1_5/06e/17d/2cd/Crude-Oil-Forecast-Markets-and-Transportation-Report-June-2015.pdf [<https://perma.cc/TXC5-7PKF>] [hereinafter CANADIAN CRUDE OIL FORECAST 2015]; see CANADIAN CRUDE OIL FORECAST 2017, *supra* note 57, at 23; Hannah Breul, *Regional Refinery Trends Evolve to Accommodate Increased Domestic Crude Oil Production*, U.S. ENERGY INFO. ADMIN. (Jan. 15, 2015), <http://www.eia.gov/todayinenergy/detail.php?id=19591> [<https://perma.cc/P3FA-3RYH>]. Once oil reaches the coast, it can also be shipped abroad if prices rise overseas. See Catherine Ngai et al., *Texas Flood: U.S. Oil Exports Pour into Markets Worldwide*, REUTERS (Feb. 8, 2018), <https://www.reuters.com/article/us-usa-oil-record-flows-analysis/texas-flood-u-s-oil-exports-pour-into-markets-worldwide-idUSKBN1FS0NP> [<https://perma.cc/YYP7-YHEQ>].

⁶² See, e.g., Robert Tuttle, *Keystone Left Behind as Canadian Oil Pours into the U.S.*, BLOOMBERG NEWS ENTER. (Nov. 14, 2014), <https://www.bloomberg.com/news/articles/2014-11-14/keystone-left-behind-as-canadian-oil-pours-into-u-s-> [on file with the *Ohio State Law Journal*] (noting construction of Flanagan South and Seaway pipelines); CANADIAN CRUDE OIL FORECAST 2015, *supra* note 61, at iv (noting five significant expansions of Enbridge pipelines headed east and south during 2015).

of oil are now traveling by rail as well.⁶³ Transporting this oil by pipeline would be safer than rail, which can lead to explosions when trains derail.⁶⁴

III. ENERGY POLICY REVOLUTIONS: CHANGING PROCEDURES FOR APPROVING ENERGY TRANSPORT PROJECTS

Recent years have seen major upheavals in the process for approving all forms of energy transport. This has been driven by four important forces. First, as energy issues have grown more contentious, the federal government has pushed for an increased role in considering proposed interstate oil pipelines and power transmission, which have traditionally been approved by the states. Second, on the flip side, some states have asserted a right to block federally-approved interstate gas pipelines. Third, environmental groups have increasingly asked governments and courts to impose expanded consultation requirements and environmental reviews on energy transport projects. Fourth, land owners have asked federal and state governments to limit eminent domain for power-lines and pipelines.

These four trends have come together most prominently in opposition to oil pipeline proposals such as Keystone XL and the Dakota Access Pipeline. But even if these moves were developed as a legal strategy to stop fossil fuels⁶⁵ (or

⁶³ Indeed, the ease of transporting oil by other means is one reason that production has increased so dramatically—when local production of oil rises dramatically, it can just be shipped abroad to places still in need of oil. James Coleman, *The Shale ‘Revolution’ Is About Gas Prices and Oil Production*, ENERGY COLLECTIVE (July 17, 2014), <http://theenergycollective.com/energylawprof/432466/shale-revolution-about-gas-prices-oil-production> [<https://perma.cc/VAR3-EUTA>]. Prices will not fall dramatically until world demand is saturated. *Id.* In contrast, because natural gas is so hard to transport, local booms in natural gas production often have a drastic impact on local gas prices. *Id.*

⁶⁴ Crude-by-rail is particularly dangerous for the light and highly flammable crude oil unlocked by hydraulic fracturing: in just one incident, a train carrying oil from new oil fields in North Dakota derailed in the Canadian town of Lac Mégantic, killing forty-seven people in a massive explosion. Grant Robertson, *North Dakota’s Explosive Bakken Oil: The Story Behind a Troubling Crude*, GLOBE & MAIL (Dec. 31, 2013), <http://www.theglobeandmail.com/report-on-business/industry-news/energy-and-resources/north-dakotas-explosive-bakken-oil-the-story-behind-a-troubling-crude/article16157981/> [<https://perma.cc/359K-6HJD>]; U.S. STATE DEP’T, FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT ES-12, ES-35 (2014), <https://keystonepipeline-xl.state.gov/documents/organization/221135.pdf> [<https://perma.cc/L6UN-T5P3>] (estimating transport by rail instead of pipeline could cost oil producers “up to \$8” extra per barrel of oil transported and that denying the Keystone XL pipeline “would result in an estimated 49 additional injuries and six additional fatalities . . . on an annual basis” due to increased oil transport by rail); see also Klass & Meinhardt, *supra* note 44, at 974–75 n.172 (discussing other destructive railway accidents involving oil transport).

⁶⁵ For a description of how delays to these pipelines impacted oil transport investment, see James W. Coleman, *Policymaking by Proposal: How Agencies Are Transforming Industry Investment Long Before Rules Can Be Tested in Court*, 24 GEO. MASON L. REV. 497, 512–14 (2017).

even make cleaner fuels look better by comparison), they will have a serious impact on all energy transport projects if they are successful. Federalism, environmental assessment, and the rights of indigenous peoples and land owners all present cross-cutting issues that are equally applicable to power and fuel transport. And there will always be challengers who object to new infrastructure because of impacts on local communities, disagreements about the best future for the electricity grid, and the environmental impact of energy transport. This section demonstrates how these issues cut across modes of energy transport, posing the greatest risk to cleaner sources of energy such as renewable power.

A. Federal Government's Expanded Role in Interstate Oil and Power Transmission

Approval of interstate powerlines and oil pipelines has historically been left to the states crossed by these energy projects.⁶⁶ That is, if a company wants to build a powerline or pipeline from Kansas to Texas, it must get the approval of Kansas, Texas, and Oklahoma, which lies between the two states.

In theory, the federal government also has some authority over these pipelines because they inevitably cross “navigable waters,” which include navigable waters such as rivers as well as some wetlands and other aquatic features that are not, in fact, navigable.⁶⁷ The federal government must grant Clean Water Act Section 404 permits for these crossings.⁶⁸ But, in practice, the federal government has left review of these projects to the states, pre-authorizing water crossings by pipelines and power-lines.⁶⁹ In 2012, it reissued

⁶⁶ Klass & Meinhardt, *supra* note 44, at 982–88, 1027–53 (noting varied approaches to oil pipeline siting in different states and collecting state statutes). One prominent exception is energy transport projects that, like Keystone XL, cross an international border—those have historically required a presidential permit under Executive Orders 11423 (1968) and 13337 (2004). *Sierra Club v. U.S. Army Corps of Eng'rs*, 990 F. Supp. 2d 9, 12–13, 17, 26 n.13 (D.D.C. 2013) (denying motion for preliminary injunction against domestic crude oil pipeline because it, unlike Keystone XL is “an entirely *domestic* pipeline”).

⁶⁷ *Rapanos v. United States*, 547 U.S. 715, 732, 759 (2006) (ruling by a four-Justice plurality that this term only includes “relatively permanent” bodies of water, concurrence from Justice Kennedy says this term, instead, refers to waters or wetlands with a “significant nexus” with navigable waters); *Solid Waste Agency of N. Cook Cty. v. U.S. Army Corps of Eng'rs*, 531 U.S. 159, 167 (2001); *United States v. Riverside Bayview Homes, Inc.*, 474 U.S. 121, 133 (1985) (finding the statute also covers wetlands adjacent to navigable waters).

⁶⁸ See 33 U.S.C. § 1341(a) (2012); *Riverside*, 474 U.S. at 123. The Congress could also pass new laws regulating pipelines and power-lines under its constitutional authority “[t]o regulate Commerce with foreign Nations, and among the several States, and with the Indian Tribes” under the U.S. Constitution’s Commerce Clause. U.S. CONST. art. I, § 8, cl. 3. Although this power is not unlimited, and may not extend to all water bodies, it certainly extends to water crossings. See *Solid Waste*, 531 U.S. at 172–74 (reading “navigable waters” in the Clean Water Act not to apply to isolated bodies of water to avoid “significant constitutional questions” about whether Congress could regulate such bodies of water).

⁶⁹ U.S. ARMY CORPS OF ENG'RS, NATIONWIDE PERMIT SUMMARY 12 (2012), https://www.spk.usace.army.mil/Portals/12/documents/regulatory/nwp/2012_nwps/2012-

a nationwide general permit that allows energy infrastructure to be built without individualized environmental review.⁷⁰ So in practice the federal government has left review of interstate pipelines and powerlines to the states that these pipelines cross.⁷¹

This equilibrium was upset when the U.S. government declared that it would do a full review of the controversial Dakota Access Pipeline, which already had approvals from the states that it would cross: North Dakota, South Dakota, Iowa, and Illinois.⁷² In contrast, to the usual expedited process, the pipeline underwent an in-depth environmental assessment and consultation process, consuming more than a year and 1,200 pages, which ultimately determined that the pipeline would have “no significant impact” on environmental or cultural resources.⁷³ This decision meant, however, that the pipeline would not have to undergo a full environmental impact statement process under the National Environmental Policy Act (NEPA), which now average over five years to complete.⁷⁴

Nevertheless, in the waning days of the Obama Administration, the Army Corps of Engineers announced it would do a full environmental impact statement for the pipeline, announcing that the federal government would take a wider role in approving interstate energy infrastructure as part of its

NWP-12.pdf [<https://perma.cc/5WD7-NXLV>] (making no mention of climate change in the environmental analysis that accompanies domestic crude pipelines). President Obama even specifically streamlined this already minimal process. Press Release, Office of the Press Sec’y, Presidential Memorandum—Expediting Review of Pipeline Projects from Cushing, Oklahoma, to Port Arthur, Texas, and Other Domestic Pipeline Infrastructure Projects (Mar. 22, 2012), <https://obamawhitehouse.archives.gov/the-press-office/2012/03/22/presidential-memorandum-expediting-review-pipeline-projects-cushing-okla> [<https://perma.cc/L8EQ-H3YF>].

⁷⁰ See U.S. ARMY CORPS OF ENG’RS, NATIONWIDE PERMIT 12, *supra* note 69.

⁷¹ On the other hand, the federal government has consistently said that it must approve pipelines that would cross *international* borders, such as the Keystone XL pipeline proposal. See Exec. Order No. 11,423, 3 C.F.R. § 742 (1966–1970) (designating the Secretary of State as responsible for receiving and considering permits for facilities, including pipelines, that cross U.S. borders); Exec. Order No. 13,337, 3 C.F.R. § 165 (2004) (providing special instruction to the Secretary of State on how to treat facilities for the “exportation or importation of petroleum, petroleum produces, coal, or other fuels”).

⁷² Memorandum from Jo-Ellen Darcy, Assistant Sec’y of the Army, to the Commander of the U.S. Army Corps of Eng’rs, Proposed Dakota Access Pipeline Crossing at Lake Oahe, North Dakota 3–4 (Dec. 4, 2016), <https://www.army.mil/e2/c/downloads/459011.pdf> [<https://perma.cc/4QUB-AK5L>].

⁷³ U.S. ARMY CORPS OF ENG’RS, MITIGATED FINDING OF NO SIGNIFICANT IMPACT, ENVIRONMENTAL ASSESSMENT DAKOTA ACCESS PIPELINE PROJECT WILLIAMS, MORTON, AND EMMONS COUNTIES, NORTH DAKOTA (2016), <https://cdm16021.contentdm.oclc.org/digital/collection/p16021coll7/id/2801> [<https://perma.cc/4GFB-W3AL>] (then select “Final EA” on the right; then click the download button above it).

⁷⁴ Dept. of Transp. v. Pub. Citizen, 541 U.S. 752, 757–58 (2004) (describing how a finding of no significant impact does not require any further Environmental Assessment or Environmental Impact Statement). For length of environmental reviews, see *infra* Part V.C.

responsibility to Indian tribes.⁷⁵ This shift was particularly dramatic because the federal government still insisted the pipeline would have “no significant impact” on the environment.⁷⁶

This new policy was reversed by the incoming Administration and is now embroiled in court disputes.⁷⁷ The district court reviewing the Army Corp’s

⁷⁵ DEP’T OF JUSTICE, JOINT STATEMENT FROM THE DEPARTMENT OF JUSTICE, THE DEPARTMENT OF THE ARMY AND THE DEPARTMENT OF THE INTERIOR REGARDING STANDING ROCK SIOUX TRIBE V. U.S. ARMY CORPS OF ENGINEERS (Sept. 9, 2016), <https://www.justice.gov/opa/pr/joint-statement-department-justice-department-army-and-department-interior-regarding-standing-rock-sioux-tribe-v-u-s-army-corps-of-engineers> [https://perma.cc/26GW-MZXX] (“Furthermore this case has highlighted the need for a serious discussion on whether there should be nationwide reform with respect to considering tribes’ views on these types of infrastructure projects.”); *Updates and Frequently Asked Questions: The Standing Rock Sioux Tribe’s Litigation on the Dakota Access Pipeline*, EARTHJUSTICE (Nov. 1, 2018), <http://earthjustice.org/features/faq-standing-rock-litigation> [https://perma.cc/V4QT-3HKC] (interpreting the government’s joint statement as “call[ing] for a national review of the government’s approach to Tribal consultation for major fossil fuel projects”). Just before the end of the Obama Administration, in January 2017, the three departments issued a report on their review of consultation with tribes on infrastructure decisions. *See* DEP’T OF JUSTICE, DEP’T OF THE ARMY & DEP’T OF THE INTERIOR, IMPROVING TRIBAL CONSULTATION AND TRIBAL INVOLVEMENT IN FEDERAL INFRASTRUCTURE DECISIONS (2017) <https://www.bia.gov/sites/bia.gov/files/assets/as-ia/pdf/idc2-060030.pdf> [https://perma.cc/HE8X-YDDQ]. The tribes’ recommendations focused mostly on oil pipelines rather than infrastructure in general. *See id.* at 15, 52, 65 (“Clarify the need to conduct an EIS for crude oil pipeline construction and operation. . . . Tribes noted that the most problematic projects reviewed under the NHPA involve extractive industries (such as oil, natural gas and mining). . . . Tribes similarly opposed the use of Nationwide Permits to authorize major infrastructure projects (particularly oil pipelines), which Tribes did not believe sufficiently safeguarded treaty rights.”). The departments, however, did not distinguish between different kinds of infrastructure projects. *See id.* at 16–24.

⁷⁶ *Standing Rock Sioux Tribe v. U.S. Army Corps of Eng’rs*, 205 F. Supp. 3d 4, 24 (D.D.C. 2016); *see also* Memorandum from Jo-Ellen Darcy, *supra* note 72, at 1, 4 (“On July 25, 2016, the U.S. Army Corps of Engineers (Corps) granted a permission to applicant Dakota Access, L.L.C., under Section 14 of the Rivers and Harbors Act of 1899, 33 U.S.C. § 408 (Section 408 permission), for a proposed crossing of Lake Oahe, a Corps project on the Missouri River. . . . The Section 408 permission was accompanied by an Environmental Assessment, as contemplated under the National Environmental Policy Act, 42 U.S.C. § 4321–4335, and its implementing regulations. . . . The Environmental Assessment included a finding that granting the Section 408 permission for the proposed crossing of Lake Oahe did not constitute a major Federal action that would have significant environmental impacts. . . . [T]his decision does not alter the Army’s position that the Corps’ prior reviews and actions have comported with legal requirements.”); Ellen M. Gilmer, *Obama Admin Denies Final Easement for Pipeline*, E&E NEWS (Dec. 4, 2016), <https://www.eenews.net/stories/1060046601/> [https://perma.cc/F267-8HYW] (noting some denounced the decision as political and urged then-President-elect Trump to reverse it upon assuming office).

⁷⁷ Exhibit 1: Easement for Fuel Carrying Pipeline Right-Of-Way Located on Lake Oahe Project, Morton and Emmons Counties, North Dakota, *Standing Rock Sioux Tribe v. U.S. Army Corps of Eng’rs*, 282 F. Supp. 3d 91 (D.D.C. 2017) (No. 1-16-cv-1534-JEB). This reversal from the Army Corps was made in response to direction from the new Administration. *See* Memorandum from President Donald J. Trump to the Sec’y of State, the

decision ultimately determined that the lengthy environmental assessment process had failed to adequately consider the possibility of oil spills and the potential impact of the project on cultural resources.⁷⁸ It remains to be seen whether the courts or future administrations will continue to expand the federal role in interstate pipeline approvals.⁷⁹

At the same time that the federal government was seeking to layer federal review on top of state reviews of interstate oil pipelines, it was seeking to remove state review of certain power-line projects. Given the abundance of wind power in the plains states, and the dearth of renewable power in the populous U.S. Southeast, a company, Clean Line Energy Partners, proposed a new power-line from Oklahoma, across Arkansas, to Tennessee. Arkansas, however, saw little benefit in a new power-line crossing the state to help power producers and consumers on either side, and rejected the power line. At this point, two federal agencies stepped in—the Department of Energy and the Southwestern Power Authority—and partnered with Clean Line Energy Partners, preempting Arkansas’s rejection of the power-line. This move by the federal government to alter the balance of power in energy federalism was also challenged in court, but has since been abandoned.⁸⁰

Secy of the Army, and the Secy of the Interior, Presidential Memorandum Regarding Construction of the Keystone XL Pipeline (Jan. 24, 2017), <https://www.whitehouse.gov/presidential-actions/presidential-memorandum-regarding-construction-keystone-xl-pipeline/> [https://perma.cc/AM4B-3FR4]; see also Plaintiff Standing Rock Sioux Tribe’s Memorandum in Support of Its Motion for Partial Summary Judgment at 1–2, *Standing Rock Sioux Tribe v. U.S. Army Corps of Eng’rs*, 282 F. Supp. 3d 91 (D.D.C. 2017) (No. 1-16-cv-1534-JEB) (arguing the President’s direction for the Army Corps of Engineers to “review and approve” the permit was “arbitrary, capricious, and contrary to law”).

⁷⁸*Standing Rock Sioux v. U.S. Army Corps of Eng’rs*, 255 F. Supp. 3d 101, 147 (D.D.C. 2017); see also Ellen M. Gilmer, *Pipeline’s Fate Uncertain After Big Legal Victory for Tribes*, E&E NEWS (June 15, 2017), <https://www.eenews.net/stories/1060056071> [https://perma.cc/J4U6-B5PM] (discussing the decision, the pipeline’s uncertain future, and how a “decision to shut off a pipeline for inadequate environmental review would be unprecedented”).

⁷⁹There are some signs that courts may be willing to overturn the general federal policy of minimal review for oil and power transport projects. A federal court in Louisiana recently held that the Army Corps’s finding of no significant impact for an oil pipeline was invalid, although the decision was subsequently enjoined by the Fifth Circuit Court of Appeals. See Ellen M. Gilmer, *Court Lifts Freeze on Bayou Bridge Project*, E&E NEWS (Mar. 16, 2018), <https://www.eenews.net/energywire/2018/03/16/stories/1060076547> [https://perma.cc/P7GK-NWUJ]. This could be seen as part of the general trend since the New Deal of moving more areas of American law from state responsibility into the federal domain. See LAWRENCE M. FRIEDMAN & GRANT M. HAYDEN, *AMERICAN LAW: AN INTRODUCTION* 136–38 (3d ed. 2017).

⁸⁰Complaint for Declaratory and Injunctive Relief at 1, *Downwind v. U.S. Dept. of Energy*, No. 3:16-cv-00207-JLH (E.D. Ark. filed Aug. 15, 2016) (challenging the Department of Energy’s decision to approve the construction and operation of an electronic transmission line on due process, statutory authority, sufficient rationale, and improper use of eminent domain); Tom Kleckner, *Arkansas Landowners Seek to Stop Plains & Eastern Clean Line Project*, RTO INSIDER (Aug. 18, 2016), <https://www.rtoinsider.com/arkansas->

B. State Government's Expanded Role in Interstate Natural Gas Pipelines

Natural gas pipelines are approved by the federal government, through the Federal Energy Regulatory Commission, and thus states have traditionally not had a significant role in regulating these projects.⁸¹ But here too the balance of power in energy federalism is under attack as states assert a right to block federally-approved projects. Any significant construction project inevitably requires numerous state and local construction permits: permits to bring in heavy equipment, permits to cross streams, permits to close roads for construction. Historically, a federal permit was generally enough to ensure that these permits were granted but first Connecticut and now the State of New York have decided that they have authority under the U.S. Clean Water Act Section 401 to deny a state Water Quality Certification to pipelines approved by the federal government.⁸²

In 2016, New York denied a Water Quality Certification to the Constitution Pipeline, which was designed to transport natural gas from shale fields in Pennsylvania to consumers in New York, and had been approved by the federal government in 2014.⁸³ In doing so, New York was following the example of Connecticut, which in 2006 denied a water quality certification to the federally-approved Islander East pipeline.⁸⁴ New York argued that pipeline construction would endanger New York's water supplies⁸⁵—a contention not supported by the Federal Energy Regulatory Commission.⁸⁶ Pipeline backers quickly filed suit, alleging that the state could not deny water quality permits to a federally

plains-eastern-clean-line-30539/ [https://perma.cc/48WN-3B3V]; Robert Walton, *DOE Terminates Partnership With Clean Line Energy Partners*, UTIL. DIVE (Mar. 26, 2018), <https://www.utilitydive.com/news/doe-terminates-partnership-with-clean-line-energy-partners/519995/> [https://perma.cc/MKGA-RHWH].

⁸¹ See Natural Gas Act of 1938, 15 U.S.C. §§ 717c, 717f(c)–(h).

⁸² See *Islander E. Pipeline Co. v. Conn. Dep't of Env'tl. Prot.*, 482 F.3d 79, 79 (2d Cir. 2006). Note that these permits are granted under the federal Clean Water Act, so they are not simply preempted by the federal approval.

⁸³ Letter from John Ferguson, Chief Permit Adm'r, N.Y. State Dep't of Env'tl. Conservation, to Lynda Schubring, Env'tl. Project Manager, Constitution Pipeline Co., LLC, Water Quality Certification/Notice of Denial (Apr. 22, 2016), http://www.dec.ny.gov/docs/administration_pdf/constitutionwc42016.pdf [https://perma.cc/LC9L-C6CX]; Alexandra B. Klass & Jim Rossi, *Reconstituting the Federalism Battle in Energy Transportation*, 41 HARV. ENVTL. L. REV. 423, 426–27 (2017) (discussing the New York Department of Environmental Conservation's decision in relation to other regulatory decisions).

⁸⁴ *Islander*, 482 F.3d at 79; *Islander E. Pipeline Co. v. McCarthy*, 525 F.3d 141, 141 (2d Cir. 2008).

⁸⁵ Letter from John Ferguson to Lynda Schubring, *supra* note 83, at 14.

⁸⁶ Order Issuing Certificates and Approving Abandonment, 149 FERC ¶ 61,199 (2014); FED. ENERGY REG. COMM'N, FINAL ENVIRONMENTAL IMPACT STATEMENT CONSTITUTION PIPELINE AND WRIGHT INTERCONNECT PROJECTS ES-4–ES-5 (2014), <https://www.ferc.gov/industries/gas/enviro/eis/2014/10-24-14-eis.asp> [https://perma.cc/5QKD-RQMM] (scroll to the bottom of the page, then click “Constitution FEIS Vol 1 Environmental Analysis PDF”).

approved pipeline.⁸⁷ The Second Circuit rejected this lawsuit, holding that New York had acted reasonably.⁸⁸ The court, however, stated that the company could file suit in the D.C. Circuit Court of Appeals if it believed that New York had waived its authority to deny the pipeline by taking so long to deny the certificate.⁸⁹

Emboldened by its victory in the Second Circuit, in 2017 the state denied a Water Quality Certification to the Valley Lateral Pipeline proposal, an eight-mile long pipeline also designed to transport natural gas from Pennsylvania to New York.⁹⁰ This short interstate pipeline had been approved by FERC in 2016.⁹¹ This time, New York did not rely on water quality arguments—instead it premised its decision on the argument that FERC had not done enough to assess how the pipeline would lead to more combustion of natural gas from users at the end of the pipeline.⁹² This time, however, FERC acted, ruling that New York had taken too long to issue this denial and had thus waived its authority to deny the pipeline a Water Quality Certification.⁹³ Barring intervention from Congress, the result of lawsuits filed in both these cases will likely determine the balance of power in natural gas transport federalism.

C. The Push for Expanded Environmental Reviews for Energy Transport Projects

In June 2013, President Obama announced a new standard for the Keystone XL pipeline, which had been proposed in 2008 to carry oil from Alberta to the United States: he would only approve the project if it would not increase oil

⁸⁷ *Constitution Pipeline Co. v. N.Y. Dept. of Env'tl. Conservation*, 868 F.3d 87, 90 (2d Cir. 2017); Unopposed Motion of Nat'l Ass'n of Mfrs., Chamber of Commerce of the U.S., Interstate Nat. Gas Ass'n of Am., American Gas Ass'n, Am. Petroleum Inst., Am. Chemistry Council, Nat. Gas Supply Ass'n, Am. Forest & Paper Ass'n, & Process Gas Consumers Group for Leave to File *Amicus Curiae* Brief Supporting Petitioner, *Constitution Pipeline v. N.Y. Dep't of Env'tl. Conservation* 868 F.3d 87 (2d Cir. 2017) (No. 16-1568); Complaint, *Constitution Pipeline v. N.Y. Dept. of Env'tl. Conservation*, 868 F.3d 87 (2017) (No. 1:16-cv-00568-NAM-DJS).

⁸⁸ *Constitution Pipeline Co.*, 868 F.3d at 91.

⁸⁹ *Id.* at 103.

⁹⁰ Letter from Thomas Berkman, Deputy Comm'r & Gen. Counsel, N.Y. State Dep't of Env'tl. Conservation, to Georgia Carter, Vice President & Gen. Counsel, Millennium Pipeline Co., & John Zimmer, Mkt. Dir., TRC Env'tl. Corp., Valley Lateral Project Notice of Decision 2 (Aug. 30, 2017), http://www.dec.ny.gov/docs/permits_ej_operations_pdf/valley_decltr.pdf [<https://perma.cc/HF7Q-VV7A>].

⁹¹ Order Denying Motion to Dismiss and Issuing Certificate, 157 FERC ¶ 61,096 (2016).

⁹² Letter from Thomas Berkman to Georgia Carter & John Zimmer, *supra* note 90, at 2.

⁹³ Declaratory Order Finding Waiver Under Section 401 of the Clean Water Act, 160 FERC ¶ 61,065 (2017).

production (and thus greenhouse gas emissions) in Canada.⁹⁴ Ultimately, the U.S. State Department, which reviewed the international project, determined that the pipeline probably would not increase oil production in Canada, but it rejected the pipeline anyway in November 2015 because, it said, the pipeline would be “perceived” to increase greenhouse gas emissions.⁹⁵ Environmental groups’ success in holding up the Keystone XL project for almost a decade has led to wider efforts to establish a “climate test” for energy transport projects that would: (a) quantify upstream and downstream emissions aided by pipelines and power transmission and (b) reject projects that would significantly increase those emissions.⁹⁶

Environmental groups are also pushing the federal government to expand environmental reviews of new gas transport—both liquefied natural gas facilities and interstate pipelines—to consider how those transport facilities will encourage natural gas production and consumption.⁹⁷ The U.S. government has thus far generally declined to consider how new pipelines and liquefied natural gas facilities will affect natural gas production and consumption.⁹⁸ The Federal Energy Regulatory Commission (FERC) has approved eleven of fourteen proposed liquefaction facilities and 154 pipeline applications since 2009.⁹⁹ Yet

⁹⁴James W. Coleman, *Beyond the Pipeline Wars: Reforming Environmental Assessment of Energy Transport Infrastructure*, 2018 UTAH L. REV. 119, 122 (2018) [hereinafter Coleman, *Beyond*].

⁹⁵*Id.*

⁹⁶*Id.* at 123–34.

⁹⁷See Aaron Flyer, Note, *FERC Compliance Under NEPA: FERC’s Obligation to Fully Evaluate Upstream and Downstream Environmental Impacts Associated with Siting Natural Gas Pipelines and Liquefied Natural Gas Terminals*, 27 GEO. INT’L L. REV. 301, 301 (2015) (arguing that FERC must consider upstream and downstream impacts in natural gas pipeline and liquefied natural gas facility approvals); see also Amy Harder, *Are Natural-Gas Exports the Next Keystone?*, WALL ST. J. (May 18, 2014), <https://blogs.wsj.com/washwire/2014/03/18/are-natural-gas-exports-next-keystone/> [<https://perma.cc/VV6T-QNM8>] (discussing environmentalist opposition to expanded use of natural gas).

⁹⁸See, e.g., FED. ENERGY REGULATORY COMM’N, OFFICE OF ENERGY PROJECTS, ENVIRONMENTAL ASSESSMENT FOR THE PROPOSED SABINE PASS LIQUEFACTION PROJECT MODIFICATION 66–67 (Apr. 2013), <https://www.cheniere.com/terminals/sabine-pass/trains-1-6/documentation/> [<https://perma.cc/2M6K-BVYT>] (assessing potential climate change impacts and emissions increases without reference to resulting changes in production and consumption); FED. ENERGY REGULATORY COMM’N, ENVIRONMENTAL ASSESSMENT FOR THE SABINE PASS LIQUEFACTION PROJECT 2-99 to 2-100 (Dec. 2011), <http://energy.gov/sites/prod/files/EA-1845-FEA-2011.pdf> [<https://perma.cc/97UN-3A2Q>] (admitting that, currently, there is no standard to determine how incremental contributions would translate into physical effects on the environment). FERC has exclusive authority to approve or deny siting, construction, and operation of liquefied natural gas facilities. 15 U.S.C. § 717b(e)(1) (2012) (“The Commission shall have the exclusive authority to approve or deny an application for the siting, construction, expansion, or operation of an LNG terminal.”).

⁹⁹The Department of Energy has approved eighteen of these projects and is reviewing thirty-eight more. U.S. DEP’T OF ENERGY, SUMMARY OF LNG EXPORT APPLICATIONS (Mar. 2016) <http://energy.gov/sites/prod/files/2016/03/f30/Summary%20of%20LNG%20Export>

FERC has resisted calls to consider the environmental impact of increased natural gas production enabled by these new transport facilities.¹⁰⁰ Under the Obama administration, this led to increasingly high profile interagency conflicts with the Environmental Protection Agency, which then believed that FERC should provide full reviews of the upstream and downstream impacts of natural gas projects.¹⁰¹ And in two recent cases, the D.C. Circuit reached opposite decisions on whether FERC must consider the downstream impacts of approving natural gas pipelines or liquefied natural gas facilities.¹⁰²

It remains to be seen whether environmental groups will have more luck with the courts, but on February 3, 2017, an outgoing commissioner of FERC, Norman Bay, effectively endorsed these outside arguments for wider environmental assessments.¹⁰³ This argument came in a separate statement to an otherwise uncontroversial pipeline approval.¹⁰⁴ Commissioner Bay continued to insist that NEPA does not require FERC to assess upstream and downstream emissions from gas pipelines, noting that “FERC has no authority

%20Applications.pdf [https://perma.cc/XE39-FCVQ].

¹⁰⁰ See, e.g., *Sierra Club v. FERC*, 827 F.3d 59, 62 (D.C. Cir. 2016); *Sierra Club v. FERC*, 827 F.3d 36, 40 (D.C. Cir. 2016); Michael Burger & Jessica Wentz, *Downstream and Upstream Greenhouse Gas Emissions: The Proper Scope of NEPA Review*, 41 HARV. ENVTL. L. REV. 109, 137 (2017) (“FERC has consistently maintained that it has no obligation to consider greenhouse emissions or any other environmental effects associated with upstream and downstream activities in the natural gas production and supply chain.”). In one older case, FERC did consider the downstream impact of increased natural gas use, concluding that it could be controlled by ensuring transport of low sulfur natural gas for combustion. *S. Coast Air Quality Mgmt. Dist. v. FERC*, 621 F.3d 1085, 1089–90 (9th Cir. 2010).

¹⁰¹ U.S. Env'tl. Protection Agency, Letter on Final Environmental Impact Statement for Columbia Gas Transmission, LLC—Leach Xpress Project, and Columbia Gulf Transmission LLC—Ryan Xpress Expansion Project to U.S. Federal Energy Regulatory Commission (Oct. 11, 2016) [on file with the *Ohio State Law Journal*] (stating that FERC’s environmental review “perpetuates the significant omission” by not considering downstream impact and so “[w]e request . . . a headquarters level meeting with us to seek a definitive resolution to this matter before you [approve the pipelines] and so that you do not continue to take this approach in additional NEPA documents”); U.S. Env'tl. Protection Agency, Letter on Comments on the Draft Guidance Manual for Environmental Report Preparation for Applications Under the Natural Gas Act to U.S. Federal Energy Regulatory Commission (Jan. 19, 2016) [on file with the *Ohio State Law Journal*] (stating that FERC’s environmental reviews of liquefied natural gas terminals must add assessment of “emissions associated with the production, transport, and combustion of the natural gas”). FERC’s position has generally been supported by the other infrastructure and production approving agencies, such as the Army Corps of Engineers and the Bureau of Ocean and Energy Management. BUREAU OF OCEAN & ENERGY MGMT., OUTER CONTINENTAL SHELF OIL & GAS LEASING PROGRAM: 2012-2017, FINAL PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT 8–37 (July 2012) (rejecting consideration of upstream and downstream impacts for oil leases).

¹⁰² *Sierra Club v. U.S. Dep’t of Energy*, 867 F.3d 189, 202 (D.C. Cir. 2017); *Sierra Club v. FERC*, 867 F.3d 1357, 1374 (D.C. Cir. 2017).

¹⁰³ Order Granting Abandonment and Issuing Certificates, 158 FERC ¶ 61,145 (2017).

¹⁰⁴ *Id.*

to regulate the production of natural gas [because] in general, that authority resides with the states.”¹⁰⁵ Nevertheless, “in light of the heightened public interest and in the interests of good government,” Commissioner Bay said FERC should begin studying the impacts of increased upstream emissions and the downstream impact of natural gas.¹⁰⁶

D. *Objections to Eminent Domain for Energy Transport*

A new front has opened in the energy transport battles, with several lawsuits alleging that private companies should not be allowed to use eminent domain to acquire easements for their projects.¹⁰⁷ Eminent domain allows purchase of easements from landowners at fair market value if a deal cannot be reached by negotiation.¹⁰⁸ It is particularly crucial for linear infrastructure such as roads, pipelines, and power-lines because, otherwise, each landowner along the proposed route can, in theory, hold out for a higher price to try to capture the entire economic value of the project.¹⁰⁹

These unresolved lawsuits have been filed in multiple federal and state courts and allege that, under state and federal constitutions, energy transport companies may not use eminent domain.¹¹⁰ They rely on multiple theories. Some argue that private companies may not use eminent domain without a particularly strong government showing of why those companies are operating in the public interest.¹¹¹ Some argue that foreign corporations should not be allowed to use eminent domain.¹¹² Some scholars argue that the federal

¹⁰⁵ *Id.*

¹⁰⁶ *Id.* These arguments have been echoed more recently by commissioner Richard Glick, who believes that FERC is required to consider these upstream and downstream greenhouse gas emissions. Order Granting Authorizations Under Sections 3 and 7 of the Natural Gas Act, 166 FERC ¶ 61,144 (2019).

¹⁰⁷ Brief of Amicus Curiae Niskanen Center at 9, *Puntenney v. Iowa Utils. Bd.*, No. 17-0423 (Iowa July 12, 2017); Complaint at 2, *Berkley v. Mountain Valley Pipeline, L.L.C.*, 2017 WL 6327829 (W.D. Va. 2017) (No. 7:17-CV-00357), *aff'd*, 896 F.3d 624 (4th Cir. 2018) [hereinafter *Berkley Complaint*]; Complaint to Vacate the FEIS for Injunctive Relief and for Declaratory Relief at 7, *Urban v. FERC*, 2017 WL 6461823, at *1 (N.D. Ohio 2017) (No. 5:17-cv-01005) [hereinafter *Urban Complaint*].

¹⁰⁸ Amnon Lehari & Amir N. Licht, Essay, *Eminent Domain, Inc.*, 107 COLUM. L. REV. 1704, 1729 (2007).

¹⁰⁹ *Id.* at 1710 (noting that pipelines are among the “Quintessential Public Projects” because “often there may be only one feasible route” and “persons owning land along the designated path are tempted to hold out for a high price in excess of the land’s opportunity cost”).

¹¹⁰ Complaint for Declaratory and Injunctive Relief at 1, *Downwind, L.L.C. v. U.S. Dep’t of Energy*, 2018 WL 3641027 (E.D. Ark. 2017) (No. 3:16-CV-00207), *vacated*, 2018 WL 3648283, at *1 (8th Cir. 2018); Kleckner, *supra* note 80.

¹¹¹ *Berkley Complaint*, *supra* note 107, at 24.

¹¹² *Urban Complaint*, *supra* note 107, at 38.

government simply was never intended to have the power of eminent domain.¹¹³ And some suggest that the case could be a vehicle for overturning the Supreme Court's controversial decision authorizing eminent domain on behalf of private companies in *Kelo v. City of New London*.¹¹⁴

If successful, these lawsuits would force energy transport companies to try to somehow piece together continuous easement routes from willing landowners—any route could be foiled by a single hold out landowner.¹¹⁵ Thus, they pose an existential threat to pipelines and power-lines.¹¹⁶

E. Cross-Cutting Energy Transport Law & Markets Require Simultaneous Focus on Both Pipelines and Power-Lines

The highest profile energy transport battles have been for oil pipelines—particularly the Keystone XL and Dakota Access Pipelines—and, to a lesser extent, natural gas pipelines, such as the Constitution Pipeline.¹¹⁷ Environmental advocates looking to stop pipelines have advocated for each of the changes suggested above: overlapping federal and state reviews, expanded environmental assessments, and restricted use of eminent domain.¹¹⁸ But focusing too intently on oil pipelines can obscure the ways that these changes to the approval process will also affect the other energy transport projects that the United States needs to move toward a cleaner energy transport system.¹¹⁹ First, each of these procedures may have a serious impact on approving new power transmission. Second, aligning energy transport procedures could enable a transition to cleaner energy because the current system is stacked in favor of fossil fuel transport.

Each of the new hurdles advocated for oil pipelines poses a serious risk of tripping up power-line projects as well. For example, a new federal commitment

¹¹³ See, e.g., William Baude, *Rethinking the Federal Eminent Domain Power*, 122 YALE L.J. 1738, 1738 (2013).

¹¹⁴ *Kelo v. City of New London*, 545 U.S. 469 (2005); Ellen M. Gilmer, *Burgeoning Legal Movement Pits Landowners Against Pipelines*, E&E NEWS (Sept. 13, 2017), <https://www.eenews.net/stories/1060060443> [<https://perma.cc/9EJE-SHZH>] (“[I]t’s possible that they might rethink parts of *Kelo* or maybe even overrule it.” (quoting Professor Ilya Somin)).

¹¹⁵ See Thomas W. Merrill, *The Economics of Public Use*, 72 CORNELL L. REV. 61, 75–77 (1986).

¹¹⁶ For a comprehensive analysis of challenges to the use of eminent domain for pipelines and power lines see James W. Coleman & Alexandra B. Klass, *Energy and Eminent Domain*, 104 MINN. L. REV. (forthcoming 2020), <https://ssrn.com/abstract=3348630>.

¹¹⁷ Brigham A. McCown, *Are New Pipeline Infrastructure Projects Doomed?*, FORBES (Apr. 4, 2018), <https://www.forbes.com/sites/brighammccown/2018/04/04/are-new-pipeline-infrastructure-projects-doomed/#81d99fd52b0a> [<https://perma.cc/3SM5-3HTT>].

¹¹⁸ See *supra* Parts III.B–D.

¹¹⁹ And, of course, policymakers should be wary of adopting procedural suggestions from groups whose substantive goals are to prevent any future approvals. Similarly, it would be a mistake to let anti-wind power groups set the procedure for approval of wind turbines.

to do full environmental and cultural review of interstate energy transport projects, like the Dakota Access pipeline, would also require federal review of interstate power transmission projects. So power-lines and oil pipelines would both be subjected to two levels of review, requiring approvals from all state regulators as well as the federal government. And decisions to limit the use of eminent domain by private companies would impact power transmission as well. In fact, the impact would likely be more severe because landowners have traditionally been warier of granting easements for power lines than pipelines, because pipelines, once buried in the ground, are invisible.¹²⁰

Similarly, if upstream and downstream reviews gain traction in the courts, it may increase uncertainty for power-line proposals as well. Of course, power-lines for renewable power transmission have many beneficial downstream impacts, such as reducing emissions from fossil fuel plants.¹²¹ Indeed, FERC has mandated that when states make transmission decisions they must consider how their decisions will impact the ability of neighboring states to meet their renewable targets.¹²²

But there is no reason to think that electric transmission will be uniquely immune from the uncertainties and delay caused by expanded and uncertain environmental assessments. First of all, power transmission has historically attracted *more* opposition than oil and gas pipelines because transmission is above the ground, leaving a permanent eyesore.¹²³ Second, the renewable projects themselves often attract local opposition driven by the effects of large solar and wind facilities on sensitive species, local land-use, and aesthetic

¹²⁰ Klass & Meinhardt, *supra* note 44, at 949.

¹²¹ Coleman, *Importing*, *supra* note 28, at 1378 (“For example, a transmission line from in-state windmills to out-of-state consumers could also provide those consumers with cleaner air if it displaced local coal power.”) (omitting internal references). And FERC has told states it must consider these benefits in setting transmission policy. Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities, 136 FERC ¶ 61,051; see Uma Outka, *Environmental Law and Fossil Fuels: Barriers to Renewable Energy*, 65 VAND. L. REV. 1679, 1692 n.45 (2012); Amy L. Stein, *The Tipping Point of Federalism*, 45 CONN. L. REV. 217, 245–46 (2012) (exploring disparity between electricity generation siting, which nominally remains in state control, and siting regimes governing electricity and natural gas transmission).

¹²² Coleman, *Importing*, *supra* note 28, at 1363.

¹²³ Lita Furby et al., *Public Perceptions of Electric Power Transmission Lines*, 8 J. ENVTL. PSYCH. 19, 20 (1988) (“Transmission lines currently represent a problem area in the electric power system: they require considerable land for their corridors, and the use of that land for transmission lines may conflict with other land use practices or plans; they cause noise . . . they are perceived to cause health problems and safety risks for both animals and humans. As a result, high-voltage transmission line have recently met a very significant amount of public opposition. . . . Opposition to transmission line siting and construction has sometimes caused enormous costs to the utilities, through long delays in gaining regulatory approval, litigation fees, and occasionally even vandalism.”).

values.¹²⁴ These opponents of wind and solar projects will use the same tactics employed in pipeline debates: even a project that has received site approvals will never be built if it cannot connect to centers of demand. With an expanded environmental impact assessment, the transmission approval process will provide another opportunity to re-litigate familiar disputes that wind turbines endanger bird populations and damage scenic vistas or that solar farms have impacts on water use, land use, and endangered species.

Transmission opponents can and will add arguments that all the downstream economic activity that is served by electricity has negative impacts on the environment or that the power transmission, which is open to all users, will be diverted to serve fossil fuel power plants.¹²⁵ And the arguments for considering upstream and downstream consequences of electricity transmission are, if anything, more reasonable than the same case for oil pipelines: oil can go by rail, ship, or pipeline, but electric power can only go by transmission lines. Thus, renewable power is, if anything, more vulnerable than oil pipelines to delay-by-environmental-review tactics. And so it has proved. When investors proposed the “Northern Pass” power line to take hydropower from Canada to Massachusetts, opponents objected that helping Canadian hydropower endangered fish populations in Canada.¹²⁶ This strategy was ultimately successful when New Hampshire rejected the power-line in February 2018.¹²⁷

¹²⁴ Patrick Devine-Wright, *Reconsidering Public Attitudes and Public Acceptance of Renewable Energy Technologies: A Critical Review* 3 (Economic & Social Research Council, Working Paper No. 1.4, 2007), http://geography.exeter.ac.uk/beyond_nimbyism/deliverables/bn_wp1_4.pdf [<https://perma.cc/95H7-VF76>] (discussing “widespread local opposition towards renewable energy developments, particularly wind and biomass”). For example, California’s largest county recently banned new large solar projects because of concerns that they would use too much land. Sammy Roth, *California’s San Bernardino County Slams the Brakes on Big Solar Projects*, L.A. TIMES (Feb. 28, 2019), <https://www.latimes.com/business/la-fi-san-bernardino-solar-renewable-energy-20190228-story.html> [<https://perma.cc/J4KU-BSBW>].

¹²⁵ Adam Orford, *Power to the People: Primer on NEPA and Transmission Lines*, 29 NAT. GAS & ELECTRICITY 16, 21 (2013) (“Perhaps most commonly, today’s transmission opponents may argue that the agency should review and disclose the impacts of induced energy generation as an ‘indirect effect.’ This might include greenhouse gas emissions if the line is expected to induce, for example, new fossil generation . . .”).

¹²⁶ David Brooks, *What Does the Quick Approval of a Vermont Power Line Say About Northern Pass?*, CONCORD MONITOR (Jan. 8, 2016), <https://content.sierraclub.org/grassrootsnetwork/team-news/2016/01/what-does-quick-approval-vermont-power-line-say-about-northern-pass> [<https://perma.cc/38PL-8G93>] (noting that environmental groups oppose transmission to bring hydropower into New England because “reservoirs displaced native peoples and swamped ecosystems covering hundreds of square miles, including an infamous 1984 drowning of some 10,000 caribou during a water release from a dam”).

¹²⁷ Michael Cousineau, *Northern Pass ‘Shocked and Outraged’ by Application Denial*, N.H. UNION LEADER (Feb. 1, 2018), <http://www.windaction.org/posts/47787-northern-pass-shocked-and-outraged-by-application-denial#.XDETqs9KjOQ> [<https://perma.cc/J9NL-7XH5>].

Similarly, eminent domain arguments against oil pipelines are being used effectively against power lines for renewables as well.¹²⁸ Resisting eminent domain was another key strategy of the successful opposition to the Northern Pass power-line.¹²⁹ And in Missouri, opponents have been able to repeatedly delay construction of a power-line designed to carry wind-energy to the Midwest.¹³⁰ Thus, while oil pipelines grab the national headlines, power-lines across the country are being held up using the same legal arguments.

Finally, focusing on energy transport as a whole, aligning energy transport procedures could be a very effective means of encouraging a transition to a cleaner energy system because the combination of market realities and current procedures favor fossil fuels. The irony of focusing on oil pipeline transport is that it is the least important link in the energy transport chain: whether or not oil pipelines are built, oil will typically get to market because oil can be easily moved by rail, barge, or truck. Natural gas and electricity, by contrast, can only be moved with large-scale projects, such as pipelines, liquefaction facilities, and power lines.¹³¹ So if new procedures raise the cost of power lines and gas pipelines, that will raise the cost of moving to a system that relies more on gas and renewable power and less on easily transportable commodities such as oil and coal.

Furthermore, as between natural gas and power, current procedures are more favorable to gas transport because, New York notwithstanding, interstate gas pipelines generally only need a single federal permit.¹³² By contrast, interstate power lines must receive a permit from each state they cross. Utilities must often consider whether to burn more natural gas near its source and transmit power where it is needed or, in the alternative, to transport the natural gas to where power is needed and burn it locally. Under the current divided regulatory system, it is easier to get approval for an interstate gas pipeline than an interstate power line, so utilities tend to transport the gas. But to move to a renewable energy future, it would make more sense to build an interstate power line that could be used to transport power from all sources: not just gas power plants, but also new wind turbines and solar panels. Thus, our divided system for approving energy transport actively pushes companies into environmentally counter-productive investments. Proponents of a cleaner energy system have

¹²⁸ Eric Dundon, *Grain Belt Express Denied a Third Time*, COLUMBIA DAILY TRIB. (Aug. 16, 2017), <http://www.columbiatribune.com/news/20170816/grain-belt-express-denied-third-time> [<https://perma.cc/5LT5-LG5Q>].

¹²⁹ Amanda Loder, *Why Eminent Domain Bills Are Center Stage in Northern Pass Controversy*, NPR: STATEIMPACT N.H. (Jan. 18, 2012), <https://stateimpact.npr.org/new-hampshire/2012/01/18/why-eminent-domain-bills-are-center-stage-in-northern-pass-controversy/> [<https://perma.cc/9L4B-Y5PE>].

¹³⁰ Dundon, *supra* note 128.

¹³¹ Dweck et al., *supra* note 39, at 473; Klass & Meinhardt, *supra* note 44, at 949.

¹³² See PAUL W. PARFOMAK, CONG. RESEARCH SERV., R43138, INTERSTATE NATURAL GAS PIPELINES: PROCESS AND TIMING OF FERC PERMIT APPLICATION REVIEW 5–6 (2015).

more to gain from considering energy transport methods together and aligning them, rather than by attacking the system piece-meal.

IV. HOW POLICY UNCERTAINTY IMPACTS INVESTMENT IN ENERGY TRANSPORT

Investors in energy transport projects demand a rate of return that compensates them for both the cost of the project and the danger that the project will be delayed or canceled.¹³³ As uncertainty increases due to expanded reviews of these projects, investors will charge more to transport fuel and electricity. Thus, energy consumers and producers will end up paying the costs imposed by expanded reviews.¹³⁴ And each of these trends is exacerbated in restructured or “deregulated” markets where investors have no guarantee of getting their money back.¹³⁵

Given their regulatory complexity, companies developing interstate energy projects already demand higher rates of return than they would receive for a typical intrastate project.¹³⁶ As states and the federal government add further overlapping reviews, as environmental assessments are expanded, and as more landowners challenge the use of eminent domain for energy transport projects, investors will demand even higher rate of returns.

Higher rates of return will raise the cost consumers pay to achieve the promise of an energy transition enabled by affordable new production of wind and gas power.¹³⁷ One consistent theme of literature on the cost of transitioning

¹³³ See Elizabeth Olmsted Teisberg, *Capital Investment Strategies Under Uncertain Regulation*, 24 RAND J. ECON. 591, 591–92 (1993).

¹³⁴ This is another way that media focus on individual pipeline controversies sometimes misses the tensions driving energy policy. In the moment of transition, expanding review often has the most tangible effect on the energy company whose project is delayed. Yet after reviews have been expanded that is simply one more cost that energy companies will build into the structure of their project.

¹³⁵ Jay Apt et al., *Promoting Low-Carbon Electricity Production*, 23 ISSUES SCI. & TECH. 37, 40 (2007) (“Profits are based on a set rate of return on capital, so more investment means more profit. When the PUC approves such investments, utilities find that they can borrow capital at reasonable rates, since the lenders correctly perceive that they face low risk because the rate of return is guaranteed and the utility faces no competition within its service territory. On the other hand, investors lending funds to competitive power producers face uncertain returns and so lend at much higher rates. Not surprisingly, the majority of utilities contemplating investments in large low-carbon plants are in regulated states, where they are attempting to secure access to capital by partnering with their public utility commissions to build such facilities.”).

¹³⁶ Phil McKenna, *Pipeline Payday: How Builders Win Big, Whether More Gas Is Needed or Not*, INSIDECLIMATE NEWS (Aug. 3, 2017), <https://insideclimatenews.org/news/02082017/natural-gas-pipeline-boom-corporate-profit-bubble-limited-demand-climate-emissions> [<https://perma.cc/HMJ2-EU3S>].

¹³⁷ Teisberg, *supra* note 133, at 591; Biao Yang et al., *Management of Uncertainty Through Postponement*, 42 INT’L J. PROD. RES. 1049 (2004).

to these power sources is that it would be minimized by creating regulatory certainty.¹³⁸

Apart from making energy transport more expensive, on the margin, expanded reviews will also make some energy transport projects not worth pursuing. This too has costs. There are the economic costs to consumers who are unable to purchase cheaper power and fuel and to the producers who cannot serve them. But there are other costs.

There are environmental costs: unable to access cheaper and cleaner sources like wind power and natural gas, power producers are stuck with older, dirtier sources like oil and coal. For example, there are not enough gas pipelines to New England to serve all of its heating and power needs in severe cold weather.¹³⁹ Although Pennsylvania is flooded with some of the cheapest gas in the world, New England's inadequate pipeline access meant it had the most expensive natural gas in the world during the December 2017 cold snap.¹⁴⁰ As a result, power producers switched to the very dirtiest sources of power, coal and oil, leaving New England with high power prices and polluted air.¹⁴¹

And there are costs for our nation's energy security as well. In late January 2018, New England was forced to import liquefied natural gas from Russia to

¹³⁸OECD, OECD BUSINESS AND FINANCE OUTLOOK 2016 144 (2016) <http://dx.doi.org/10.1787/9789264257573-en> [<https://perma.cc/6BWP-MESS>] ("Future regulatory uncertainty makes it difficult for investors to formulate risk and return expectations, causing hesitation and preventing capital inflows."). *Id.* at 149 (noting that key cost drivers include "The level of uncertainty, especially within broader enabling conditions, and attractiveness of domestic policy frameworks: projects may face significant speculative risks that are difficult for the private sector to quantify and mitigate, linked notably to unstable and unpredictable legal and regulatory frameworks, high political risk and construction risk."); Frank Maarten Jan Venmans, *The Effect of Allocation Above Emissions and Price Uncertainty on Abatement Investments Under the EU ETS*, 126 J. CLEANER PRODUCTION 595, 595 (2016) ("[H]igh levels of uncertainty, creating a risk of offshoring even when companies innovate, creates an option value to postpone abatement investments."); Apt et al., *supra* note 135, at 39 ("[T]he timing and stringency of pollution constraints remain uncertain. In this climate, companies will likely continue to build conventional high-carbon-emissions plants, because they are cheaper. Indeed, uncertainty may encourage utilities to rush now to build conventional plants in the hope that they will be grandfathered under any new regulations, which would increase total costs by imposing more stringent emission constraints for plants built later."). *See generally* Peter S. Reinelt & David W. Keith, *Carbon Capture Retrofits and the Cost of Regulatory Uncertainty*, 28 ENERGY J. 101, 118 (2007) (modeling indicates that regulatory uncertainty may increase the cost of transitioning to cleaner energy sources by as much as 61%); William Blyth et al., *Investment Risks Under Uncertain Climate Change Policy*, 35 ENERGY POL'Y 5766, 5766 (2007).

¹³⁹Jim Polson & Naureen S. Malik, *Oil Tops Gas in New England Power Mix as Temperatures Plummet*, BLOOMBERG NEWS ENTER. (Dec. 28, 2017), <https://www.bloomberg.com/news/articles/2017-12-28/oil-tops-gas-in-new-england-power-mix-as-temperatures-plummet> [on file with the *Ohio State Law Journal*].

¹⁴⁰*Id.*

¹⁴¹*Id.*

supplement its poor pipeline access.¹⁴² The gas came from a company sanctioned by the U.S. Treasury Department but was available for use in the United States because it had been first purchased by French intermediaries.¹⁴³ Thus, while U.S. producers were forced to sell their natural gas at the mid-continent's bargain prices, sanctioned Russian companies received a premium price from gas-starved New England consumers.

V. PRINCIPLES TO ENABLE THE ENERGY FUTURE

To attract investment in a new energy economy, the United States will need procedures that can accommodate increased interest in energy transport decisions while, at the same time, providing certainty to energy transport investors. This section suggests four reforms that could accomplish these twin goals. First, energy transport approvals should invite wider consultation with affected parties while, at the same time, ultimately placing decision-making authority in one level of government. Second, if approval processes are to be reformed, that reform should generally be prospective only, not impacting projects already in the review pipeline. Third, further deadlines for environmental reviews and approvals should be used to motivate prompt action from agency decision-makers. Fourth, judicial review of projects under the National Environmental Policy Act should be streamlined and subject to time limits that address the worst delays. Fifth, the government should sponsor more studies of key nationwide issues—such as the environmental impact of particular fuels or the long-term effects of increased fossil fuel infrastructure—that otherwise may derail individual approval processes.

A. *Wide Consultation, One Decision-Maker*

Governments should make increased provision for wide participation in approvals of energy infrastructure, but energy transport projects should only require approval from federal regulators or state regulators—not both. Whichever regulators are chosen to make this final decision should facilitate input from all levels of government. Stakeholder interest in the global energy industry, both within and beyond their jurisdiction, is appropriate because carbon emissions from the energy industry affect all parts of the globe.¹⁴⁴ Consumer interest in energy supply chains is here to stay.

At the same time, ultimate decision-making authority on energy projects should, to the extent possible, be centralized. It is natural that stakeholders who

¹⁴² Ben Lefebvre, *Russian Gas Defies U.S. Sanctions to Reach New England*, POLITICO (Jan. 26, 2018), <https://www.politico.com/story/2018/01/26/russia-gas-sanctions-american-homes-312866> [<https://perma.cc/QFP8-HTL8>].

¹⁴³ *Id.*

¹⁴⁴ James W. Coleman, *Unilateral Climate Regulation*, 38 HARV. ENVTL. L. REV. 87, 107–09 (2014) (describing why climate regulators must pay particular attention to carbon emissions overseas).

do not get their way at one level of government should seek to re-litigate the issue at another level. But overlapping decision-makers is a recipe for uncertainty. And there is no reason to think that subjecting each proposed project to multiple veto gates would improve overall economic and environmental results.¹⁴⁵ Multiple veto gates just mean more opportunities to kill proposed investments—and that is true whether those investments are in oil, gas, or renewable power transport.

Congress should pass legislation to give the Federal Energy Regulatory Commission authority to approve all modes of interstate energy transport: both power-lines and pipelines, whether they are transporting oil, gas, or power. In effect, this would expand the system that is currently in place for natural gas pipelines to oil pipelines and power lines. At the same time, Congress should explicitly give FERC authority, in consultation with the Environmental Protection Agency, to grant any permits or pre-empt any state or local laws, as necessary, to complete construction of these federally-approved interstate projects. There is no need to transfer all permit granting authority to the federal agency—instead, FERC could merely step in when a necessary water quality certification or other permit is unreasonably denied or delayed.¹⁴⁶

Canada's traditional system of energy regulation may be a helpful model here. Canada has traditionally left regulation of energy production (and, to an extent, local pollution) to each province's sole authority, which is similar to the traditional approach in the United States.¹⁴⁷ But interprovincial energy transport issues, by contrast, are for the Canadian federal government to decide; provinces have input through the principle of cooperative federalism,¹⁴⁸ but cannot veto—or even “frustrate” interprovincial projects.¹⁴⁹ Although this system is being seriously stressed by Canadian oil pipeline politics today, this overall system allows for wide participation in energy decision-making but ensures that each issue is ultimately decided by a single responsible government.¹⁵⁰

Current controversies in Canada also provide examples of how the federal government can ensure that subnational governments grant the necessary permits for nation-wide infrastructure—avoiding the New York Constitution

¹⁴⁵ See generally Gary W. Cox & Mathew D. McCubbins, *The Institutional Determinants of Economic Policy*, in PRESIDENTS, PARLIAMENTS, AND POLICY 58 (Stephan Haggard & Mathew D. McCubbins eds., 2001) (describing the concept of “veto gates”).

¹⁴⁶ See, e.g., *Piedmont Envtl. Council v. FERC*, 558 F.3d 304, 320 (4th Cir. 2009).

¹⁴⁷ See Fenner L. Stewart, *How to Deal with a Fickle Friend? Alberta's Troubles with the Doctrine of Federal Paramountcy*, in 2017 ANNUAL REVIEW OF INSOLVENCY LAW 163, 165 (Janis P. Sarra & Barbara Romaine eds., 2018) [hereinafter Stewart, *How*].

¹⁴⁸ Fenner L. Stewart, *Interjurisdictional Immunity, Federal Paramountcy, Co-operative Federalism, and the Disinterested Regulator: Exploring the Elements of Canadian Energy Federalism in the Grant Thomas Case*, 33 BANKING & FIN. L. REV. 227, 228–29 (2018).

¹⁴⁹ *Id.* at 248; *Can. W. Bank v. Alberta* [2007] 2 S.C.R. 3, 7 (Can.); *Campbell-Bennett Ltd. v. Comstock Midwestern Ltd.*, [1954] S.C.R. 207, 207 (Can.).

¹⁵⁰ Stewart, *How*, *supra* note 147, at 164.

Pipeline scenario.¹⁵¹ In 2016, Kinder Morgan won federal approval to expand its Trans Mountain pipeline, which runs West from oil fields in the province of Alberta across the province of British Columbia to the port of Vancouver.¹⁵² The pipeline, however, is quite controversial in British Columbia.¹⁵³ In fact, British Columbia's ruling coalition is formed by two parties who joined forces in the province's legislative assembly based on an agreement to "[i]mmediately employ every tool available to the new government to stop the [federally-approved] expansion of the Kinder Morgan pipeline."¹⁵⁴ In practice, this has meant that the provincial government and local governments have slow-walked and denied permits to Kinder Morgan as it attempts to complete expansion of the pipeline.¹⁵⁵

In response, the federal government has developed an expedited procedure for excusing compliance with provincial and local ordinances that hold up pipeline construction.¹⁵⁶ It has already employed this authority to invalidate various local roadblocks for the Trans Mountain pipeline such as plan approvals and tree cutting permits that Kinder Morgan had sought to complete its construction.¹⁵⁷

Every national project requires numerous local permits: permits to cross local water bodies, permits to shut down roads to bring in heavy equipment, permits to deviate from local zoning requirements, permits for noisy equipment.¹⁵⁸ Groups that are unhappy with national approvals of national infrastructure can use each of these permitting decisions as veto gates to frustrate national policies.¹⁵⁹ Congress should give sufficient authority to FERC to ensure that national policy is implemented.

¹⁵¹ Letter from John Ferguson to Lynda Schubring, *supra* note 83.

¹⁵² *Prime Minister Justin Trudeau's Pipeline Announcement*, JUSTIN TRUDEAU, PRIME MINISTER OF CAN. (Nov. 29, 2016), <http://pm.gc.ca/eng/news/2016/11/29/prime-minister-justin-trudeaus-pipeline-announcement> [<https://perma.cc/7N3Y-J2WF>].

¹⁵³ See generally *2017 Confidence and Supply Agreement between the BC Green Caucus and the BC New Democrat Caucus*, BC NEW DEMOCRAT CAUCUS 1, http://bcndpcaucus.ca/wp-content/uploads/sites/5/2017/05/BC-Green-BC-NDP-Agreement_vf-May-29th-2017.pdf [<https://perma.cc/9VEH-ENSJ>].

¹⁵⁴ *Id.* at 5.

¹⁵⁵ Gordon Hoekstra, *B.C. Considering Appeal of NEB Dispute Process for Permitting of Trans Mountain Pipeline*, VANCOUVER SUN (Jan. 19, 2018), <http://vancouversun.com/business/energy/b-c-considering-appeal-of-neb-dispute-process-for-permitting-of-trans-mountain-pipeline> [<https://perma.cc/2HUY-DUE9>].

¹⁵⁶ Canada, National Energy Board, *Board Decision: Trans Mountain Pipeline ULC*, (Alberta: NEB, Jan. 18, 2018) at 7–11.

¹⁵⁷ Claudia Cattaneo, *NEB Rules in Favour of Trans Mountain on Burnaby Bylaw Impasse*, FIN. POST (Dec. 7, 2017), <http://business.financialpost.com/commodities/energy/neb-rules-in-favour-of-trans-mountain-on-burnaby-bylaw-impasse> [<https://perma.cc/GB2C-PV6K>].

¹⁵⁸ Klass & Minehardt, *supra* note 44, at 982–83.

¹⁵⁹ See, e.g., 160 FERC ¶ 61,6065, *supra* note 93, at 1 (challenging a national project for failure to meet permit requirements).

If, alternatively, the federal government chooses to maintain the current division between federal approval of natural gas pipelines and state-by-state approval of oil pipelines and power lines, it should assure that only one level of review is required: either federal or state. Thus, on one hand, federal reviews of interstate natural gas pipelines should be supplemented with federal authority to waive state requirements holding up those pipelines. And on the other hand, the federal government should refrain from imposing environmental reviews on power lines and oil pipelines, which are reviewed by the states.

B. Changes to Approval Process Should Be Prospective Only

To the extent possible, changes to the rules of environmental review and the standards for approval should be implemented only prospectively, so that the goalposts are not moved half-way through the review process. This would allow continued improvement in environmental assessment while providing a measure of certainty to investors in interstate energy transport.¹⁶⁰

For example, scientists continue to improve techniques for assessing the “life cycle” impacts of energy production; these assessments show the net impact of a fuel over its full cycle from production to transport to consumption.¹⁶¹ These techniques can be helpful to answer general questions about fuel such as: When you consider the land used by corn, does ethanol really cause less greenhouse gas emissions than gasoline? Or when you consider the power plants that provide electricity, do electric cars cause less greenhouse gas emissions than gasoline vehicles?¹⁶²

These techniques, however, do not yet provide resolution to determine whether a single energy transport project will raise or lower global greenhouse gas emissions¹⁶³ (and may never be able to provide this resolution). Governments should continue attempting to improve this method of environmental assessment but should not impose it as part of existing reviews. Developing experimental methods of study within an environmental review process simply imposes too much delay and uncertainty on the environmental review process.

Judicial review of environmental reviews have a natural tendency to change the rules midstream because judicial review is inherently backward-looking. When a judge holds that a long-standing environmental review practice does not

¹⁶⁰In fact, this change would remove one current disincentive for improving environmental review procedures: reformers would no longer have to worry about sending current projects back to square one. See Nathan Cortez, *Regulating Disruptive Innovation*, 29 BERKELEY TECH. L.J. 175, 201–06 (2014) (evaluating the importance of timing when considering regulatory decisions and interventions).

¹⁶¹See JAMES COLEMAN ET AL., CAN. INST. RES. L., OCCASIONAL PAPER #49, CALIBRATING LIQUEFIED NATURAL GAS EXPORT LIFE CYCLE ANALYSIS: ACCOUNTING FOR LEGAL BOUNDARIES AND POST-EXPORT MARKETS 1 (May 2015).

¹⁶²See Coleman & Jordaan, *supra* note 19, at 2.

¹⁶³Coleman, *Beyond*, *supra* note 94, at 142–45.

comply with the National Environmental Policy Act, she holds that review invalid. She cannot make her ruling prospective only.¹⁶⁴ This makes the National Environmental Policy Act a particularly dangerous tool to energy transport investors who would like to be able to rely on a federal approval once it is given. This problem is particularly vexing because NEPA does not include a statute of limitations; NEPA actions are only limited by the Administrative Procedure Act's six-year statute of limitations.¹⁶⁵ In theory then, a power line or pipeline that received approval and was built in 2018 could lose its authorization to operate due to a suit filed in 2024 (and potentially resolved years later).¹⁶⁶

Thus, aggressive judicial expansion of environmental reviews is a unique danger to energy transport investment. To combat this, reviewing courts should take two steps. First, courts should be wary of reading new procedural requirements into environmental reviews. Time and time again, the Supreme Court has unanimously reversed lower courts that demanded expanded environmental reviews.¹⁶⁷ In fact, the Supreme Court has never held that a NEPA review was insufficient.¹⁶⁸ The average NEPA review now takes five years to complete and even a finding of no significant impact—a finding that a full NEPA review is not necessary—can cover 1,200 pages.¹⁶⁹ Any court can find imperfect reasoning in such a gargantuan document, but courts must give more weight to both the imperative of speeding reviews and the consistent

¹⁶⁴ *Harper v. Va. Dep't of Taxation*, 509 U.S. 86, 96 (1993) (“[A] rule of federal law, once announced and applied to the parties in controversy, must be given full retroactive effect by all courts adjudicating federal law.”). For the split rationale that the Court used to reach this conclusion, see *James B. Beam Distilling Co. v. Georgia*, 501 U.S. 529, 535 (1991) (Souter, J., opinion of the court) (judicial decisions are “overwhelmingly” “fully retroactive, applying both to parties before the court and to all other by and against whom claims may be pressed, consistent with res judicata and procedural barriers such as statute of limitations”); *id.* at 546–47 (White, J., concurring) (arguing that judicial rulings may sometimes be prospective because judges sometimes “make” law); *id.* at 549 (Scalia, J., concurring) (“[J]udges in a real sense ‘make’ law. But they make it as judges make it, which is to say as though they were ‘finding’ it—discerning what the law is, rather than decreeing what it is today changed to, or what it will tomorrow be.”) (emphasis omitted).

¹⁶⁵ *Sierra Club v. Slater*, 120 F.3d 623, 631 (6th Cir. 1997).

¹⁶⁶ If the government believed it was prejudiced by the delay, it could attempt to argue that the decision was protected by the doctrine of laches. *See id.* at 631. Of course, the government defending the permitting decision could be an entirely different government than the one that made the initial decision, and might have an entirely different energy policy.

¹⁶⁷ Richard Lazarus, *The National Environmental Policy Act in the U.S. Supreme Court: A Reappraisal and a Peek Behind the Curtains*, 100 GEO. L.J. 1507, 1507 (2012) (“The Supreme Court has decided seventeen cases arising under the National Environmental Policy Act (NEPA) and the government has not only won every case, but won almost all of them unanimously.”).

¹⁶⁸ *Id.*

¹⁶⁹ *See, e.g., U.S. ARMY CORPS OF ENG'RS, supra* note 73.

guidance of the Supreme Court that NEPA does not impose any procedures beyond those “stated in the plain language of the Act.”¹⁷⁰

Second, although courts cannot make their civil rulings prospective-only, they can limit the practical impact of striking down an environmental review by allowing the project proponent to continue building and operating its facility while the federal agency supplements its environmental review.¹⁷¹ The energy company building a power line or pipeline should be allowed to take the risk that the federal agency might change its views after completing the supplemental review ordered by the court. In most cases, by the time a court rules that the government should have considered a question more carefully, the government will already have asserted that it would have reached the same decision in any event. Thus, in the run of the mill case, the government’s supplemental court-ordered environmental review is exceedingly unlikely to change its ultimate decision on an energy transport project. To avoid needless delay, project proponents should be allowed to continue building their project at their own risk.¹⁷²

Finally, if courts do not moderate their demands for ever-lengthier environmental reviews, Congress should step in to restore a balance between making reviews more predictable and timelier while maintaining their rigor. An amendment to NEPA would be an imprecise tool for accomplishing this balance, but if necessary, Congress could raise the bar for winning a preliminary injunction under NEPA or codify further deference to agency decisions. As explained below, a more radical step would simply immunize from review any project that had languished in the approval process for more than six years.

C. Deadlines for Environmental Reviews

Congress should mandate, and federal agencies should implement, faster deadlines for environmental reviews of energy transport projects. The average federal environmental impact statement currently takes five years to prepare.¹⁷³ These delays make it impossible for U.S. companies to respond nimbly to the

¹⁷⁰ Vt. Yankee Nuclear Power Corp. v. Nat. Res. Def. Council, Inc., 435 U.S. 519, 548 (1978). In other words, courts should take more seriously their oft-stated commitment not to “flyspeak” a weighty environmental review. Theodore Roosevelt Conservation P’ship v. Salazar, 661 F.3d 66, 75 (D.C. Cir. 2011); Nw. Indian Cemetery Protective Ass’n v. Peterson, 795 F.2d 688, 695 (9th Cir. 1986), *rev’d on other grounds sub nom.*, Lyng v. Nw. Indian Cemetery Protective Ass’n, 485 U.S. 439, 458 (1988).

¹⁷¹ Ellen M. Gilmer, *Sabal Trail Permits ‘Defective and Unlawful’ — Enviro*, E&E NEWS (Feb. 20, 2018), <https://www.eenews.net/stories/1060074237> [<https://perma.cc/6HHE-A6N8>]; Ellen M. Gilmer, *Shutdown Day for Southeast Pipeline? All Eyes on the Court*, E&E NEWS (Feb. 7, 2018), <https://www.eenews.net/stories/1060073089> [<https://perma.cc/3YKF-SD8B>].

¹⁷² This is effectively what the district court allowed in the Dakota Access case. *See Standing Rock Sioux Tribe v. U.S. Army Corps of Eng’rs*, 282 F. Supp. 3d 91, 109 (D.D.C. 2017).

¹⁷³ *See infra* notes 175–177.

shifting geography of energy supply and demand.¹⁷⁴ And they are not necessary to protect the environment; Canada, a nation that is arguably on the cutting edge of environmental assessment practice, has recently proposed expanding the scope of its environmental reviews and completing them in a maximum of 300 days—less than a year.¹⁷⁵ There is simply no reason that a careful environmental review should take half a decade to complete.

The NEPA environmental impact statement process has always been slow and is getting slower. A ten-year 2008 study found that the average NEPA review took 3.4 years and that this average time period was growing over time.¹⁷⁶ A 2015 Department of Energy study found that the average NEPA review took over 4 years,¹⁷⁷ and a 2016 review by the National Association of Environmental Professionals found that the average review took 5.1 years to complete.¹⁷⁸ Some reviews last much more than a decade.¹⁷⁹

These timelines slow U.S. companies trying to keep pace with changes in the geography of energy supply and demand. Consider how energy markets can change in four years:

- In 2008, the U.S. Energy Information Administration projected that the United States would have 30 Gigawatts of wind power generation by 2015 and just 140 Megawatts of solar photovoltaic power.¹⁸⁰
- In 2012, the United States already had installed over 39 Gigawatts of wind power and 380 Megawatts of solar photovoltaic and was

¹⁷⁴ See *infra* footnotes 179–185 and accompanying text.

¹⁷⁵ A *Proposed New Impact Assessment System*, GOV'T OF CAN. (Dec. 5, 2018), <https://www.canada.ca/en/services/environment/conservation/assessments/environmental-reviews/environmental-assessment-processes.html> [<https://perma.cc/VJH8-LJF8>] (describing proposal). The very largest projects would be allowed double the time, 1.6 years, which is still less than a third of the average time for a U.S. review. See *infra* notes 175–177.

¹⁷⁶ Piet deWitt & Carole A. deWitt, *How Long Does It Take to Prepare an Environmental Impact Statement?*, 10 ENVTL. PRAC. 164, 164 (2008).

¹⁷⁷ U.S. DEP'T OF ENERGY, ISSUE NO. 86, NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) LESSONS LEARNED QUARTERLY REPORT 11 (Mar. 2016), <https://www.energy.gov/sites/prod/files/2016/03/f30/LLQR-March-2016.pdf> [<https://perma.cc/MXG6-YP87>]. A 2014 study from the U.S. Government Accountability found that the average time for a NEPA review was 4.6 years. U.S. GOV'T ACCOUNTABILITY OFF., GAO-14-369, NATIONAL ENVIRONMENTAL POLICY ACT: LITTLE INFORMATION EXISTS ON NEPA ANALYSES 13 (Apr. 2014), <https://www.gao.gov/assets/670/662543.pdf> [<https://perma.cc/Q559-QM2Z>].

¹⁷⁸ *NAEP Annual National Environmental Policy Act (NEPA) Report for 2016*, NAT'L ASS'N OF ENVTL PROFESSIONALS (Oct. 2017) <http://www.naep.org/nepa-2016-annual-report> [<https://perma.cc/73X8-NSK3>].

¹⁷⁹ deWitt & deWitt, *supra* note 176, at 165.

¹⁸⁰ U.S. ENERGY INFO. ADMIN., ANNUAL ENERGY OUTLOOK 2008 142 (June 2008) [hereinafter *EIA OUTLOOK 2008*] [https://www.eia.gov/outlooks/archive/aeo08/pdf/0383\(2008\).pdf](https://www.eia.gov/outlooks/archive/aeo08/pdf/0383(2008).pdf) [<https://perma.cc/U5J6-G4TD>].

projected to have 54 Gigawatts of wind power and 2,000 Megawatts of solar photovoltaic power installed by 2015.¹⁸¹

- In 2008, the United States, faced with high natural gas prices, was building multi-billion-dollar terminals to import liquefied natural gas from countries across the world.¹⁸²
- In 2012, the United States, benefiting from massive new production of natural gas was looking forward to years of low prices and a future as a liquefied natural gas exporter.¹⁸³
- In 2010, U.S. oil production had fallen for four decades and stood at 5.5 million barrels per day of oil.¹⁸⁴ Meanwhile, the country imported 9.4 million barrels of petroleum products per day.¹⁸⁵
- By 2014, U.S. oil production had spiked to 8.8 million barrels per day and net imports had fallen to 5.1 million barrels per day.¹⁸⁶

The need to shorten the absurd time frames now required to complete environmental reviews is one of the few areas of bipartisan agreement in investment and infrastructure policies.¹⁸⁷ Several initiatives have been taken to

¹⁸¹ U.S. ENERGY INFO. ADMIN., ANNUAL ENERGY OUTLOOK 2012 206 (June 2012) [hereinafter EIA OUTLOOK 2012] [https://www.eia.gov/outlooks/archive/aeo12/pdf/0383\(2012\).pdf](https://www.eia.gov/outlooks/archive/aeo12/pdf/0383(2012).pdf) [<https://perma.cc/HMQ4-PEJY>].

¹⁸² EIA OUTLOOK 2008, *supra* note 180, at 46–49.

¹⁸³ EIA OUTLOOK 2012, *supra* note 181, at 91–94.

¹⁸⁴ U.S. *Field Production of Crude Oil*, U.S. ENERGY INFO. ADMIN., [hereinafter *U.S. Crude Oil Production*] https://www.eia.gov/dnav/pet/pet_crd_crpdn_adc_mbb1_m.htm [<https://perma.cc/7TY2-LGTX>].

¹⁸⁵ U.S. *Net Imports of Crude Oil and Petroleum Products*, U.S. ENERGY INFO. ADMIN., [hereinafter *U.S. Net Imports*] <https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=MTTNTUS2&f=M> [<https://perma.cc/3X7A-A6RE>].

¹⁸⁶ U.S. *Crude Oil Production*, *supra* note 184; U.S. *Net Imports*, *supra* note 185; *see also Crude Oil Production by State*, *supra* note 51. In the same year, petroleum product exports from the United States reached 4.2 million barrels per day. U.S. *Exports of Crude Oil and Petroleum Products*, U.S. ENERGY INFO. ADMIN., <https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=MTTEXUS1&f=M> [<https://perma.cc/36AH-K5WC>]. By 2017, it reached 6.3 million barrels per day. *Id.*

¹⁸⁷ President Obama's regulatory czar recently highlighted the absurdity of the current burdensome environmental review process. Cass R. Sunstein, *Trump Did Something Good This Week*, BLOOMBERG NEWS ENTER. (Aug 17, 2017) <https://www.bloomberg.com/view/articles/2017-08-17/trump-did-something-good-this-week> [on file with the *Ohio State Law Journal*] (“The status quo is not great. It’s ridiculous. If the permitting bureaucracy were a supervillain, it would be the Blob. It can take several years, and millions of dollars, to obtain environmental clearance for construction permits, even if the goal is to develop green infrastructure and to improve the environment.”) These reviews take more than three years on average and may last decades. deWitt & deWitt, *supra* note 176, at 164 (“The time to

try to shorten these reviews.¹⁸⁸ But these initiatives have not been sufficient—reviews still get longer every year.¹⁸⁹

Congress could go further and impose deadlines on environmental reviews. In other areas, agencies have been able to implement timelines for drug approvals.¹⁹⁰ Two keys to this have been industry funding and agreed timelines for review.¹⁹¹ And the experience of countries like Canada suggests that much shorter deadlines—less than a year in all but the most complex cases—are workable for environmental reviews.¹⁹² At a minimum, Congress should mandate that all environmental reviews be completed in less than two years and give responsible agencies financial incentives to meet these deadlines.

The most frequent criticism of such efforts is that they will lead to rushed environmental reviews that are even more vulnerable to being invalidated by the courts.¹⁹³ But this criticism is misplaced and likely mistaken. It is misplaced because if compliant environmental review under the National Environmental Policy Act unavoidably requires five years then the Act, or its interpretation, must be changed. And it is likely mistaken because if all reviews are accomplished in a timelier fashion, it would likely change expectations of what is feasible in a review: it is doubtful whether judges will expect agencies to complete five years of work in two years.

prepare an EIS ranged from 51 days to 6,708 days (18.4 years). The average time for all federal entities was 3.4 years. Average times differed significantly by year and by entity. The time for all entities to prepare their EISs increased during our study period by an average of 37 days per year.”). And these delays often are particularly burdensome for environmentally beneficial projects such as public transport. *See, e.g.,* Friends of the Capital Crescent Trail v. Fed. Transp. Admin., 253 F. Supp. 3d 296, 298–99 (D.D.C.), *rev’d*, 877 F.3d 1051, 1066 (D.C. Cir. 2017) (enjoining construction of the purple line mass transit system in Maryland).

¹⁸⁸ *See* Fixing America’s Surface Transportation Act of 2015 (FAST Act), Pub. L. No. 114-94, Title XLI; *see also* Presidential Memorandum Expediting Review of Pipeline Projects From Cushing, Oklahoma, to Port Arthur, Texas, and Other Domestic Pipeline Infrastructure Projects, 77 Fed. Reg. 18,891, § 1 (Mar. 28, 2012).

¹⁸⁹ *See supra* notes 176–178.

¹⁹⁰ Susan Thaul, *Prescription Drug User Fee Act (PDFUA): 2012 Reauthorization as PDFUA V*, CONG. RESEARCH SERV. 6 (Feb. 2013), <https://fas.org/sgp/crs/misc/R42366.pdf> [<https://perma.cc/X5ZS-JHPK>] (noting “general view” that congressionally-mandated deadlines for Food & Drug Administration approval of new drugs “has succeeded”); Margaret Gilhooley, *Drug User Fee Reform: The Problem of Capture and a Sunset, and the Relevance of Priorities and the Deficit*, 41 N.M. L. REV. 327, 327 (2011); Robert Temple, *Commentary on “The Architecture of Government Regulation of Medical Products”*, 82 VA. L. REV. 1877, 1878 (1996).

¹⁹¹ Temple, *supra* note 190, at 1880–81.

¹⁹² GOV’T OF CAN., *supra* note 175.

¹⁹³ Ellen M. Gilmer, *Critics on New Leasing Policy: ‘BLM Is Inviting Lawsuits’*, E&E NEWS (Feb. 2, 2018), <https://www.eenews.net/stories/1060072713> [<https://perma.cc/GSJ2-QD32>].

D. Speeding Judicial Review Under the National Environmental Policy Act

Even when environmental reviews have been concluded, investors cannot count on completing their project—they can get caught in years of litigation over the adequacy of this review. Every year, about 100 projects are challenged under the National Environmental Policy Act, and more than half of these claims are filed in district courts within the U.S. Court of Appeals for the Ninth Circuit.¹⁹⁴ Investors must count on the government to defend their permit, particularly in the Ninth Circuit where project proponents have often not even been allowed to help the government defend their permit in court.¹⁹⁵

Plaintiffs challenging these environmental reviews enjoy average-to-above-average success rates, and even if a company's permit survives district court review, it can be invalidated in the Court of Appeals.¹⁹⁶ In theory, the government could appeal a loss to the Supreme Court, but the Court has only taken seventeen NEPA cases in the half century that the law has operated.¹⁹⁷ Each time the Supreme Court has taken a case, the government has won; indeed almost all of these decisions have been unanimous and several rebuked the lower courts for requiring too much of government environmental reviews.¹⁹⁸

But government agencies cannot count on the Supreme Court to rein in the lower courts—the Supreme Court simply takes too few cases.¹⁹⁹ So if the government wants to ensure that its environmental reviews will stand—that its half decade of environmental analysis is not struck down—it may gild the lily, doing more and more review to avoid a loss in court. And investors look at this process and see they will have to wait over five years for their review and, even when that is done, may be stuck in years of further litigation.²⁰⁰

To streamline these reviews, Congress should take two steps. First, NEPA challenges to FERC approvals of natural gas projects already receive expedited review starting in the Courts of Appeals: either the D.C. Circuit or the Circuit where the company's headquarters is located.²⁰¹ All energy projects, including

¹⁹⁴ David E. Adelman & Robert L. Glicksman, *Presidential and Judicial Politics in Environmental Litigation*, 50 ARIZ. ST. L.J. 3, 7–8 (2018).

¹⁹⁵ *Churchill Cty. v. Babbitt*, 150 F.3d 1072, 1082–83 (9th Cir. 1998), *amended by* 158 F.3d 491 (9th Cir. 1998).

¹⁹⁶ *Churchill*, 150 F.3d at 1082–83.

¹⁹⁷ Richard J. Lazarus, *The Power of Persuasion Before and Within the Supreme Court: Reflections on NEPA's Zero for Seventeen Record at the High Court*, 2012 U. ILL. L. REV. 231, 231 (2012).

¹⁹⁸ *Id.* at 248.

¹⁹⁹ *Id.* at 231.

²⁰⁰ See Adelman & Glicksman, *supra* note 194, at 38 (noting that 25% of district court cases under NEPA last from 3.25–10 years).

²⁰¹ 15 U.S.C. § 717r(b) (2005).

solar farms on federal land, and power-lines to support those projects, should receive expedited review in the D.C. Circuit.²⁰²

Second, when a company is forced to wait an unreasonable length of time for a permit, that permit should eventually be immunized from invalidation under NEPA. After all, if a government issues an environmental impact statement and permit six years after a project is proposed, what is the benefit of allowing judicial review of that environmental impact statement? The environmental review took six years. If a court believes that is still not enough review, what more would it like: twelve years of review?

And if the government's review is still truly inadequate after six years, why should the private company building the project be punished further? If the government had wanted to, it could have denied the permit at any time in the preceding six years. If it remained committed to the project through multiple administrations and successive congresses, what practical purpose is achieved by further delay?

If NEPA review was precluded after some interval—whether six years, eight years, or ten—the government would still have an incentive to issue timely reviews.²⁰³ Project proponents do not want to wait six years for a permit—they would like their reviews and permitting completed within one or two years. But a time limit would solve the worst cases of delay and address investors' worst fears.

²⁰² See, e.g., *Sherwood v. Tenn. Valley Auth.*, 842 F.3d 400, 402 (6th Cir. 2016) (power line right-of-way vegetation-maintenance policy); *Sherwood v. Tenn. Valley Auth.*, 590 F.App'x 451, 456 (6th Cir. 2014) (same); *Nat'l Parks Conservation Ass'n v. Semonite*, 311 F. Supp. 3d 350, 358–59 (D.D.C. 2017) *appeal docketed*, No. 18-5179 (D.C. Cir. Aug. 10, 2018) (Surry-Skiffes Creek-Wheaton electrical infrastructure project); *Nat'l Parks Conservation Ass'n v. Jewell*, 965 F. Supp. 2d 67, 71 (D.D.C. 2013) (Susquehanna-Roseland transmission line); John O'Connell, *Environmental Group Appeals Gateway West Line*, CAPITAL PRESS (Feb. 26, 2017), https://www.capitalpress.com/state/idaho/environmental-group-appeals-gateway-west-line/article_50b3df9f-1131-5175-a4f0-8c261b853da9.html [<https://perma.cc/7PW8-KU2V>] (reporting on the Bureau of Land Management approval of a high-voltage transmission power line through public land); *Two Lawsuits Seek to Block Project Approvals Based on Failure to Mitigate Climate Change Impacts*, MARTEN LAW (Aug. 26, 2009), <http://www.martenlaw.com/newsletter/20090826-lawsuits-to-block-project-approvals> [<https://perma.cc/YCR3-YFHE>] (“‘Sunrise Powerlink Transmission Project’ which was proposed by San Diego Gas & Electric Company in 2005 and approved by the California Public Utilities Commission”); Bruce A. Scruton, *Power Line Foes Fault \$60M Deal with Park*, N.J. HERALD (June 12, 2013), https://www.njherald.com/story/22567023/power-line-foes-fault-60m-deal-with-park# [<https://perma.cc/C73H-CBBF>] (describing the Susquehanna-Roseland transmission line).

²⁰³ Of course, if an energy transport company fails to give the federal government key information that it needs to make a decision in a timely fashion, the federal government should be allowed to delay the decision further.

E. Wider Study of Cross-Cutting Issues

There are some cross-cutting issues that tend to arise in multiple individual permitting decisions. For instance: What is the impact of wind power on avian populations? What is the life-cycle impact of natural gas or oil produced by fracking? What level of natural gas infrastructure would be compatible with meeting U.S. climate goals? These are important questions that cannot be fully resolved in individual permitting decisions. The federal government should invest in studies that carefully address these questions on a nationwide level and are designed to be used in individual permitting decisions.

For instance, if an agency like FERC did a careful study of what level of fossil fuel pipeline infrastructure build-out would likely be built if the country adopted an optimal carbon tax, or if the nation met its current greenhouse gas reduction goals, that study could be a relevant consideration in pipeline and transmission approvals. Giving due credit to the distributed knowledge reflected by markets,²⁰⁴ if the pipeline build out was faster than anticipated, that could signal either (1) that the previous studies, like so many energy studies, had failed to predict market developments, (2) that new pipelines should not be approved, or (3) that the country was not willing to abide by the strict limits reflected in theoretical commitments to price carbon or reduce emissions.

Thus, these studies, unlike assessments of individual infrastructure, would be able to provide useful information because they would take advantage of existing life-cycle analyses's focus on large scale markets where more information may be a public good because of its wide benefits, rather than the project-level decisions that are better studied by individual companies with money on the line.²⁰⁵ Again, these studies would likely not be a determinative factor in any review: inconsistencies between the study and infrastructure investment would be more likely to result from the study's necessary generality

²⁰⁴ See generally Scott Shane, *Prior Knowledge and the Discovery of Entrepreneurial Opportunities*, 11 ORG. SCI. 44869 (2000) (arguing that "opportunity discovery is a function of the distribution of information in society").

²⁰⁵ There is little reason, however, to think that pipeline companies regularly build projects that would not have been viable in a world where carbon was priced. After all, fossil fuel companies are more likely than any broad category of industry to make decisions based on the assumption that carbon will be priced in the future. See Feike Sijbesma, *Running the Race Together*, 2017-2018 CARBON PRICING LEADERSHIP COALITION REPORT 6 (2018), <https://www.carbonpricingleadership.org/carbon-pricing-leadership-report> [https://perma.cc/CN5V-A83P]; EXXONMOBIL, ENERGY & CARBON—MANAGING THE RISKS 17 (2009), <https://cdn.exxonmobil.com/~media/global/files/energy-and-environment/report---energy-and-carbon---managing-the-risks.pdf> [https://perma.cc/7SKT-7R9R] (planning for carbon prices ranging from \$20/ton to above \$40/ton); Letter to Shareholders, ROYAL DUTCH SHELL 2 (May 16, 2014), https://www.shell.com/investors/environmental-social-and-governance/sri-news-presentations-and-annual-briefings/_jcr_content/par/tabbedcontent/tab_667142067/textimage_1262076677.stream/1519763050501/9fac753c67985b2e3b7e123534a1c27c97ab400ca35647b4271b2ed5342be6c3/sri-web-response-climate-change-may14.pdf [https://perma.cc/V582-DYTN].

and forward looking nature. But, over time, they could be calibrated to improve the country's energy transport infrastructure forecasting.²⁰⁶

VI. CONCLUSION

For a century the United States has relied on two principle sources of energy: coal for electricity and oil for transport. Coal and oil are cheap and easy to transport, crisscrossing the country every day by rail, barge, pipeline, truck, and tanker. But they come at an environmental cost: burning these fossil fuels pollutes the air that we breathe and warms the globe.

The United States now has a golden opportunity to transition to cleaner sources of energy, with more and more transportation powered by electricity, and more electricity powered by natural gas and renewables. And new technology has suddenly made these energy sources even cheaper than other fuels in much of the country.

But there is a catch: gas and power are much, much more expensive to transport to energy users across the United States. Without massive new investments in energy transport, these resources will largely go to waste. And, at the same moment, energy transport infrastructure has grown more controversial due to a complex mix of environmental concerns, state and federal jockeying for power, and landowner concerns.

Congress and the courts must provide energy transport investors with a stable, predictable, and timely process to build the pipelines and power-lines that can build a cleaner energy future. By working together investors and policymakers can ensure that the United States reaps the full environmental, economic, and security benefits of its new energy boom.

²⁰⁶ Thus far, the United States has made little systematic effort to identify these issues or produce studies designed to enable individual permitting decisions. For example, in its recent guidance on considering greenhouse gas emissions in National Environmental Policy Act decisions the U.S. Council on Environmental Quality suggested reliance on the Department of Energy's study of the climate impact of liquefied natural gas exports. COUNCIL ON ENVTL. QUALITY, FINAL GUIDANCE FOR FEDERAL DEPARTMENTS AND AGENCIES ON CONSIDERATION OF GREENHOUSE GAS EMISSIONS AND THE EFFECTS OF CLIMATE CHANGE IN NATIONAL ENVIRONMENTAL POLICY ACT REVIEWS 16 (Aug. 1, 2016), https://energy.gov/sites/prod/files/2016/08/f33/nepa_final_ghg_guidance.pdf [<https://perma.cc/74LY-Q4QT>]. But that study only compared gas exports to other fossil fuels such as coal. U.S. DEP'T OF ENERGY, NAT'L ENERGY TECH. LAB. (NETL), LIFE CYCLE GREENHOUSE GAS PERSPECTIVE ON EXPORTING LIQUEFIED NATURAL GAS FROM UNITED STATES 18 (May 2014).